Contamination Issues at Hunters Point Shipyard

Presented to
U.S. Environmental Protection Agency

by **Daniel Hirsch**
President, Committee to Bridge the Gap
and former Director, Program on Environmental and Nuclear Policy, UC Santa Cruz

February 15, 2019

What We Will Be Addressing

Tetra Tech Scandal

Untold Radiological History at HPS

PRG Calculations

Shallow Soil Cover Unable to Isolate Contamination

Problems with Proposed Retesting

Proposition P Mandate for Full Cleanup Ignored, Violates Community Acceptance

Systemic Flaws of HPS Cleanup:

- Most of Site Not Tested
- Most Radionuclides Not Tested
- Most Tests Couldn't Detect Radionuclides at Cleanup Levels
- Cleanup Standards Outdated & Non-protective
- Coverup Instead of Cleanup of Contamination

Tetra Tech Falsifications

97% of measurements were found to be suspect

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA

December 27, 2017

George ("Pat") Brooks
US Department of the Navy
33000 Nixie Way, Bldg 50
San Diego, CA 92147

Dear Mr. Brooks:

Thank you for providing for review the *Draft Radiological Data Evaluation Findings Report for Parcels B and G Soil* ("Report"), Former Hunter's Point Naval Shipyard (HPNS), September 2017. The U.S. Environmental Protection Agency (EPA), the California Department of Toxic Substances Control (DTSC), and the California Department of Public Health (CDPH) have independently reviewed this report in detail with a technical team including national experts in health physics, geology, and statistics, and EPA's comments are attached.

In Parcel B, the Navy recommended resampling in 15% of soil survey units in trenches, fill, and building sites. EPA, DTSC, and CDPH found signs of potential falsification, data manipulation, and/or data quality concerns that call into question the reliability of soil data in an additional 76% of survey units, bringing to 90% the total suspect soil survey units in Parcel B. (These do not add exactly due to rounding) In Parcel G, the Navy recommended resampling 49% of survey units, and regulatory agencies recommended 49% more, for a total of 97% of survey units as suspect.

EPA Found Only 3% of Samples to Be Free of Falsification

Summary of EPA, DTSC, CDPH review of Parcel G Radiological Data Evaluation

	Trench	Fill	Building Sites	Total	% of total
Total Survey Units in Parcel G	63	107	32	202	100%
Navy recommended resampling	20	53	25	98	49%
EPA, CDPH, DTSC recommend resampling	39	54	5	98	49%
Total recommended resampling	59	107	30	196	97%
No signs of falsification found in data	4	0	2	6	3%
% of total recommended resampling	94%	100%	94%	97%	

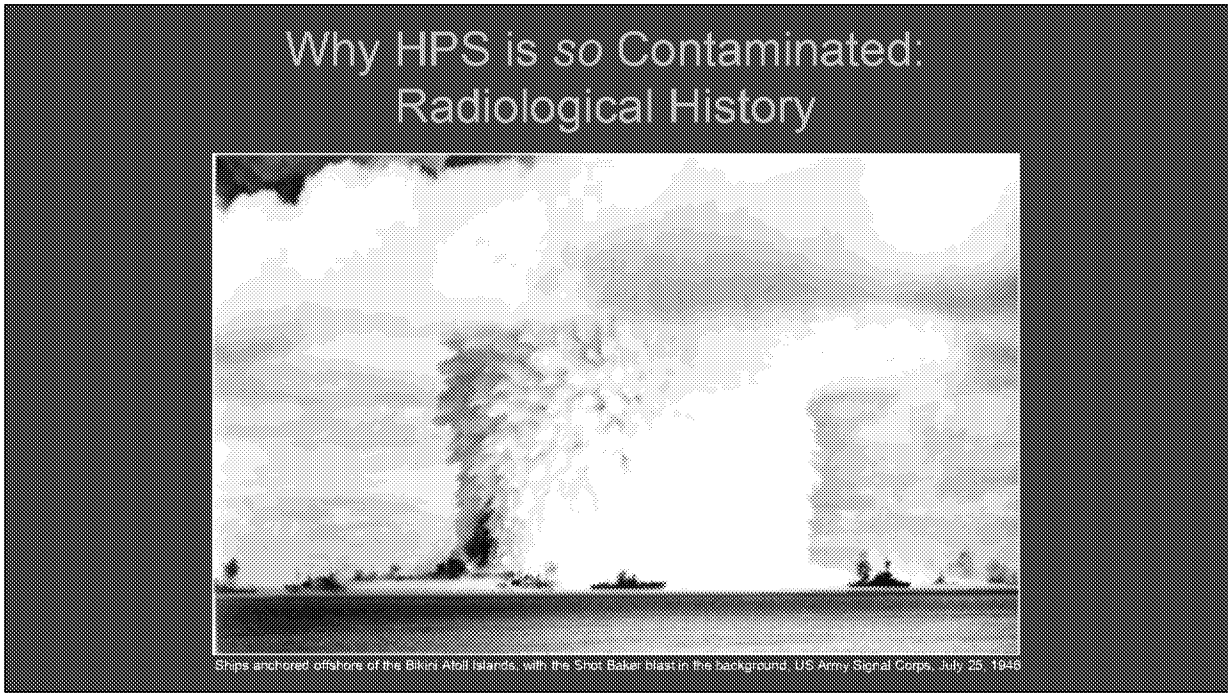
EPA, CDPH, and DTSC review of Parcel B Rad Data Evaluation

	Trench	Fill	Building Sites	Total	% of total
Total Survey Units in Parcel B	70	110	17	197	100%
Navy recommended resampling	2	18	9	29	15%
Navy recommended reanalyzing archived samples	2	1	0	3	2%
EPA, CDPH, DTSC recommend resampling	55	87	7	149	76%
Total recommended resampling	57	105	16	178	90%
No signs of falsification found in data	13	5	1	19	10%
Regulators not yet reviewed	0	0	0	0	0%
% of total recommended resampling	81%	95%	94%	90%	

	Total	% of total	D-2	UC-1	UC-2	UC-3
Total Survey Units in Parcels UC-1,2,3 & D-2	80	100%	5	26	20	29
Navy recommended resampling	55	69%	4	14	13	24
Navy recommended reanalyzing archived samples	0	0%	0	0	0	0
DTSC recommended resampling	23	29%	1	12	6	4
Total recommended resampling	78	98%	5	26	19	28
No signs of falsification found in data	2	3%	0	0	1	1
% of total recommended resampling	98%		100%	100%	95%	97%

Tetra Tech Scandal is just the Tip of the Iceberg

The Navy has ignored
the likelihood of widespread contamination
throughout HPS



First, before we can understand what is so problematic about the cleanup, It's important to be aware of the extent of contamination which is likely at HPS

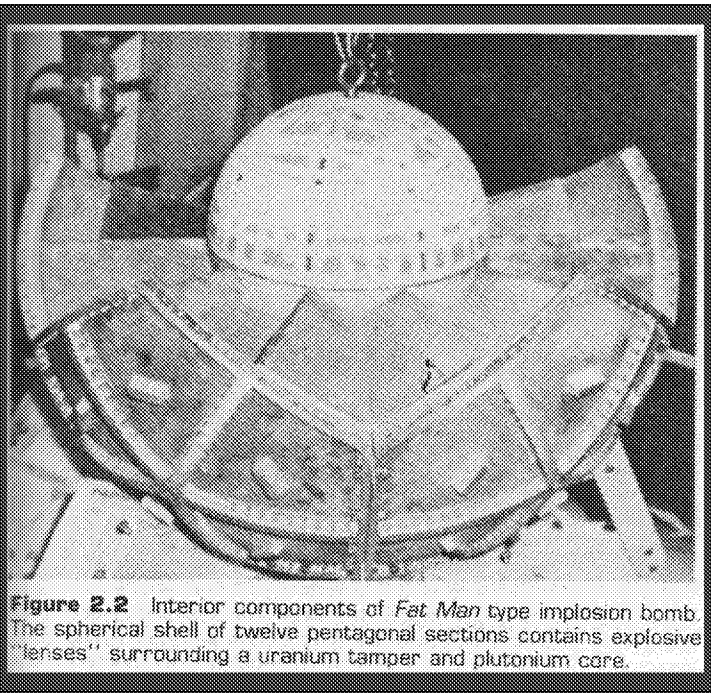


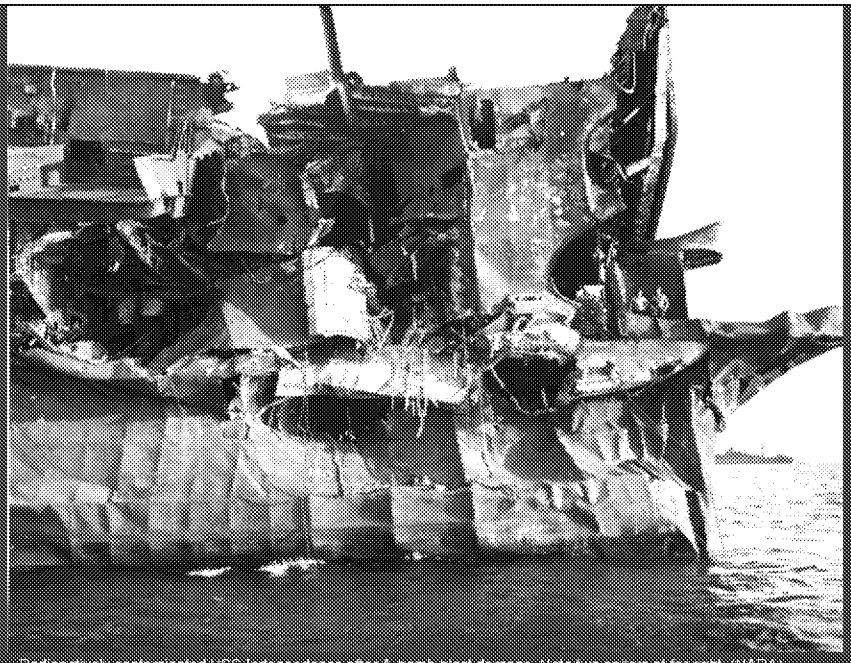
Figure 2.2 Interior components of *Fat Man* type implosion bomb. The spherical shell of twelve pentagonal sections contains explosive "lenses" surrounding a uranium tamper and plutonium core.

Radioactivity from the Pacific nuclear tests included:

- unfissioned uranium and plutonium
- a wide array of fission products
- activation products from neutron irradiation of materials like sand and sediment

Not shown are A-bomb designs with U-235, and two- and three-stage hydrogen weapons with U-235, U-238, and Pu-239.

Miscalculation led to intense contamination of hundreds of ships. The underwater blast tossed high in the air large amounts of sand, corral, and sediment, which had been irradiated by the neutrons of the explosion and become activated, so those activation products, plus fission products and unfissioned plutonium and uranium rained down on the ships,



Radioactively contaminated USS Independence after A-bomb blast damage. Note two sailors at far right. (NARA)

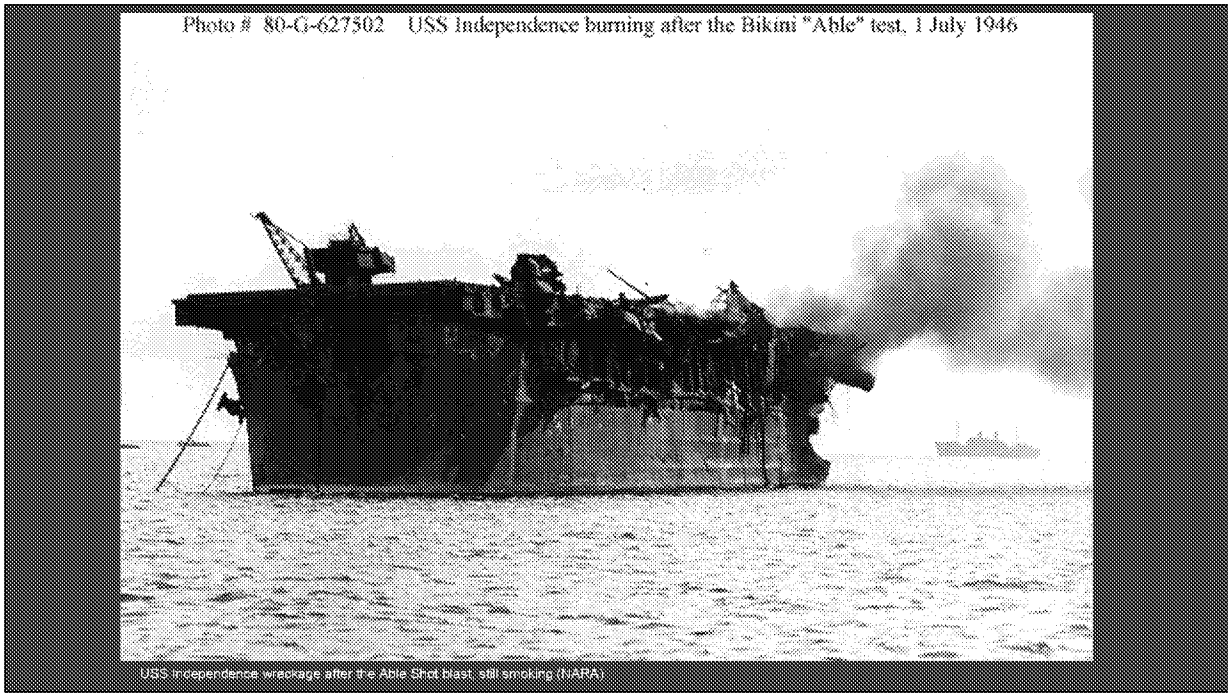
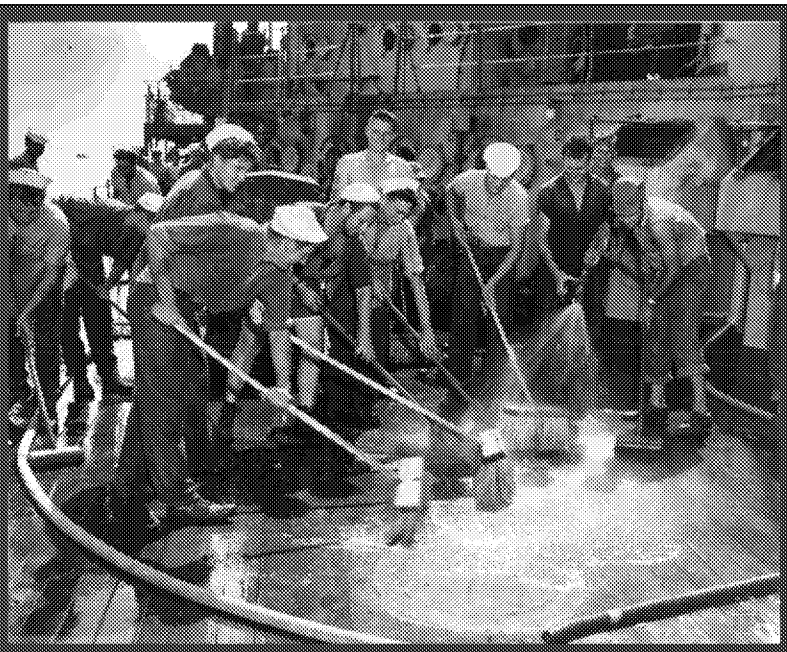


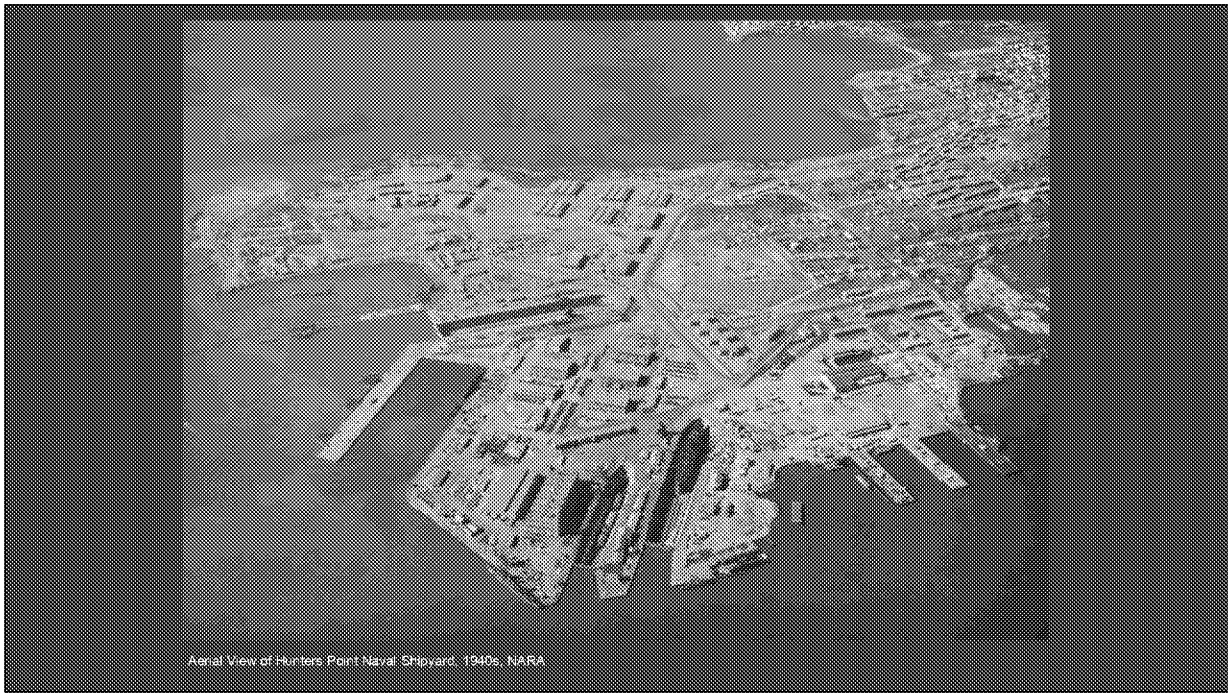
Photo # 80-G-627502 USS Independence burning after the Bikini "Able" test, 1 July 1946
USS Independence wreckage after the Able Shot blast, still smoking (NARA)



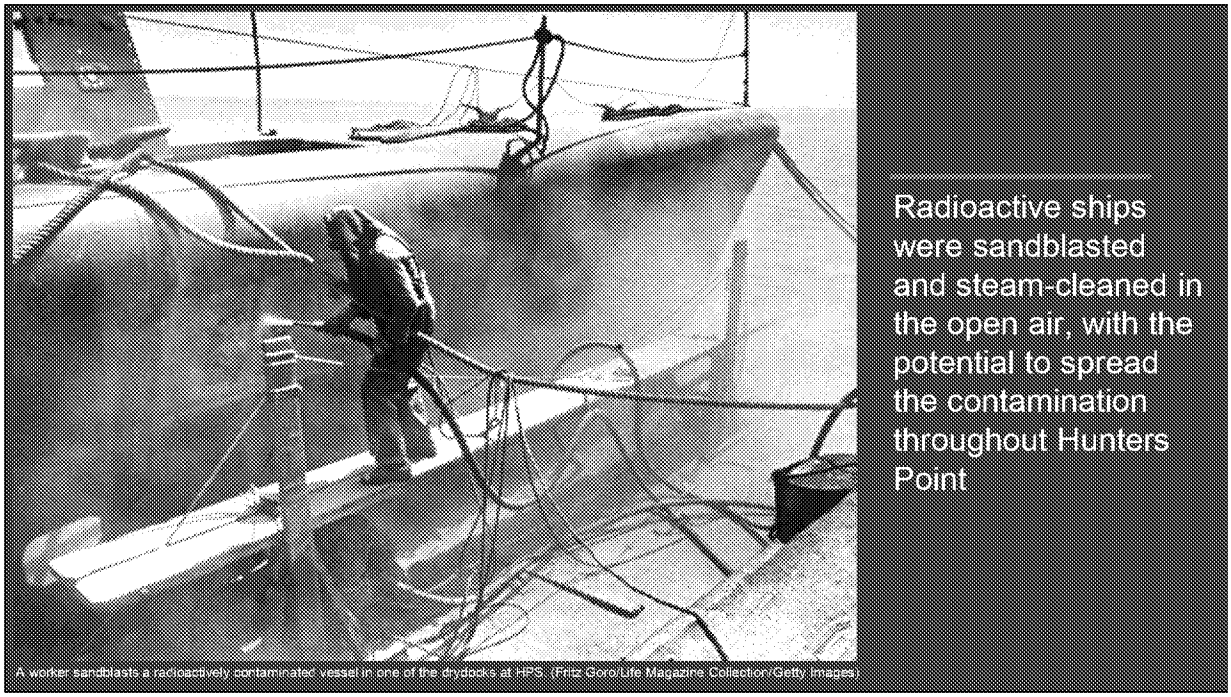
Group of sailors wash down the highly contaminated deck of the captured German battleship USS Prinz Eugene (IX 300). The ship was so radioactive that it was later sunk. (NARA, Still Pictures Unit, Record Group 80-G, box 2228)

Crude efforts at decontaminating the radioactive fleet at sea proved futile

Navy decided to take 79 irradiated Crossroads ships to Hunters Point for decontamination


Aerial View of Hunters Point Naval Shipyard, 1940s, NARA

Drydock 4 at Hunters Point, 1950s (Todd Lappin)

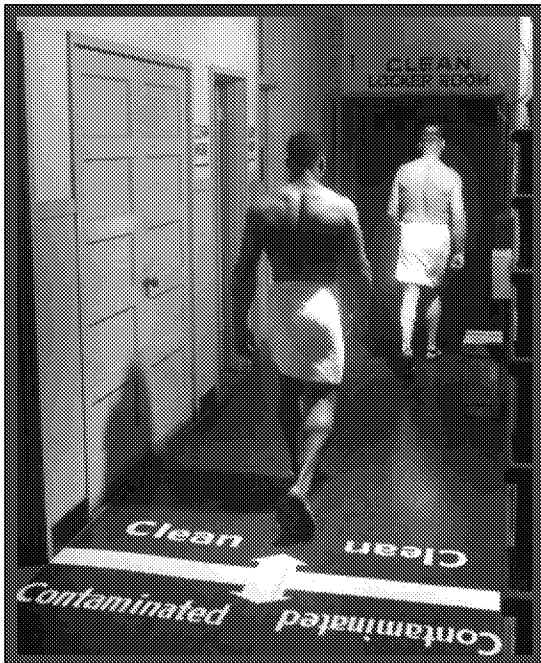


Worker sandblasting radioactive ship

>600,000 Gallons of Radioactive Fuel Burned at HPS

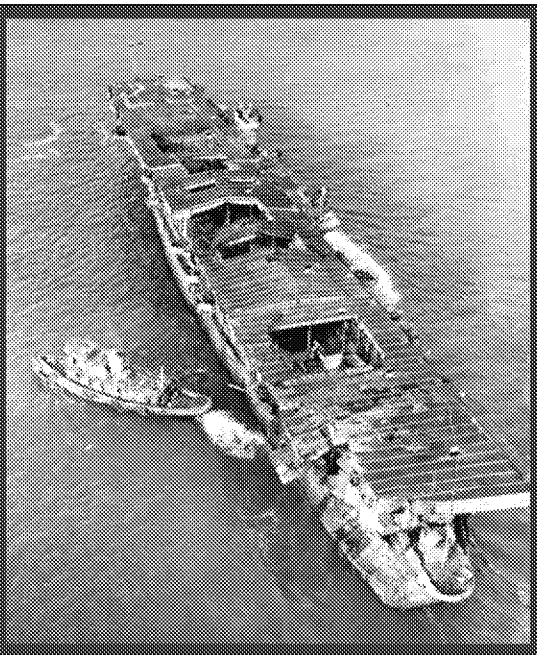
610,000 gallons of contaminated fuel oil from Navy ships exposed to nuclear weapons tests were burned in boilers on land at HPS, where the contamination could be widely dispersed by air releases

A sign in front of the Ex-USS Independence anchored at HPS, reading "Personnel for Radioactive Ships Only" (NARA)



Navy workers crossing the boundary line. Credit: Fritz Goro / Life Magazine Collection / Getty Images

Sailors–and their clothing–contaminated by nuclear work at HPS were washed at the site, with the contaminated rinse water going down the drains and leaking into the soil through breaks in the lines.



Ex-USS Independence loaded with barrels of radioactive waste on its way to be sunk at the Farallon Islands (San Francisco Maritime National Historical Park)

Tens of thousands of barrels of radioactive waste, both from HPS and other nuclear sites in the region, were stored at HPS for eventual dumping at the Farallon Islands. This included an entire contaminated aircraft carrier loaded with radioactive waste.

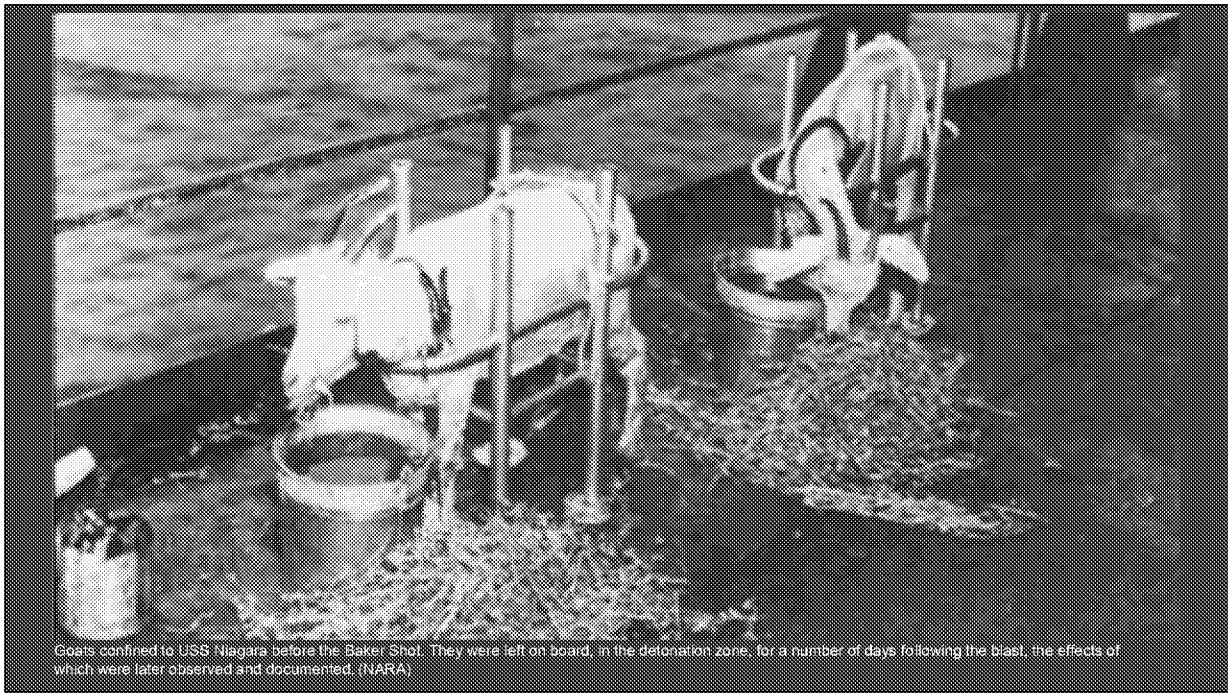
The storage at HPS had the potential for significant leakage.

A crab on a sunken barrel containing radioactive waste, Farallon Islands (USGS)

Naval Radiological Defense Laboratory

In addition to the decontamination of ships from the Pacific nuclear tests, the Naval Radiological Defense Laboratory was established at HPS. *It did extensive research with large quantities of radionuclides, including large amounts of nuclear weapons debris brought back for analysis.*

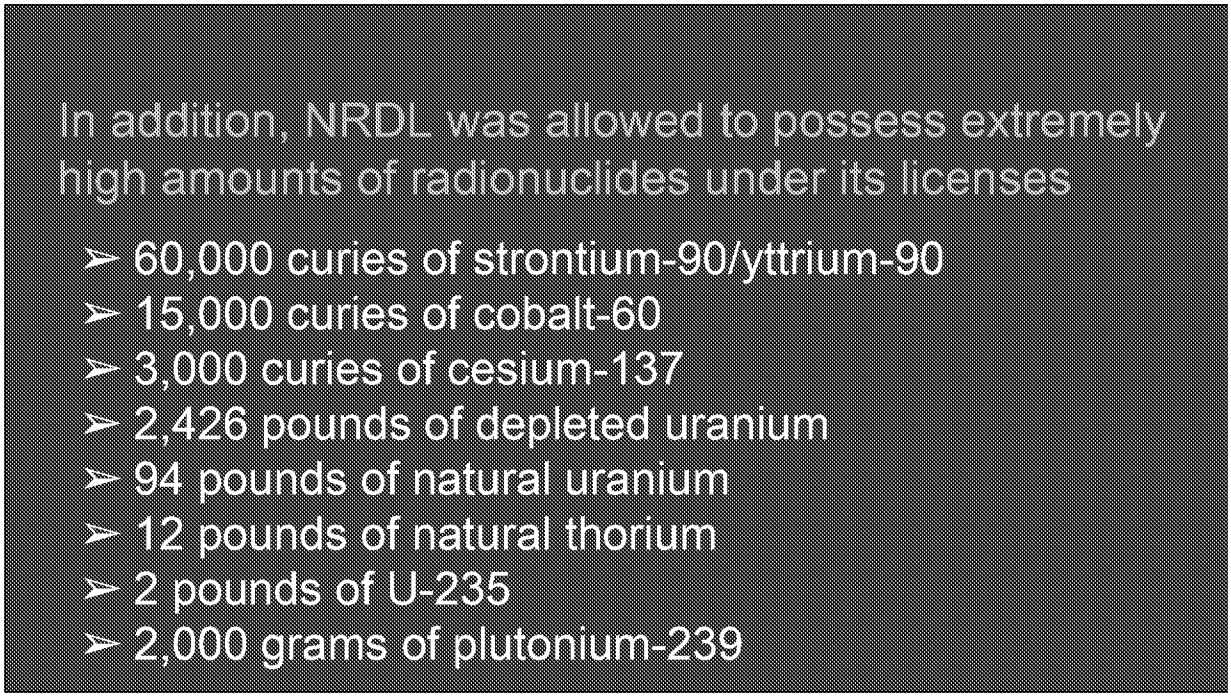
Large numbers of various animals were irradiated and injected with radioactivity at HPS, potentially contaminating portions of the site by releases from excrement and incineration of carcases.



Goats confined to USS Niagara before the Baker shot. They were left on board, in the detonation zone, for a number of days following the blast, the effects of which were later observed and documented. (NARA)

Large numbers of various animals were irradiated and injected with radioactivity at HPS, with potential releases from excrement and incineration of carcases.

Much of the radioactivity at HPS (e.g., the contamination on the ships, the nuclear weapons debris brought back for research, the contaminated diesel fuel burned in boilers) was never licensed.



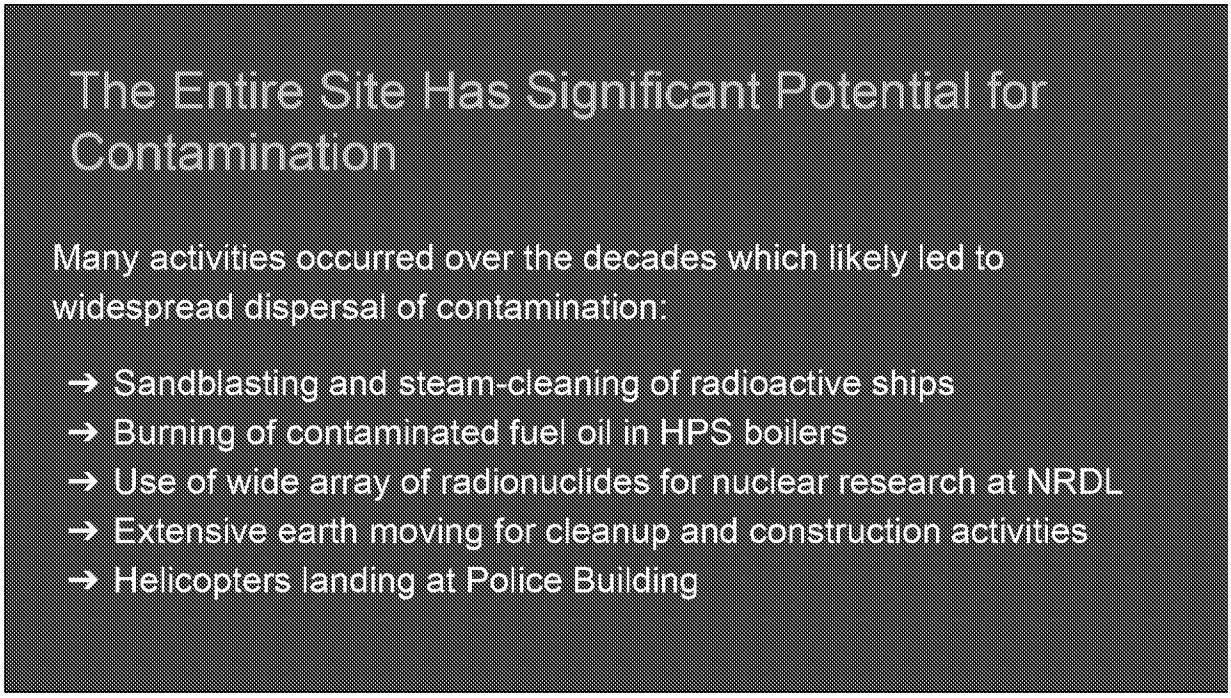
These are licensed limits and it is possible for some radionuclides that actual possession amounts were smaller. However, much of the radioactivity at Hunters Point--such as the contamination on the ships brought back from the Pacific nuclear tests for decontamination at HPS, and the weapons test debris brought back for analysis--was not subject to license, so the actual amounts at HPS might be considerably higher than shown here.

To put these large amounts into perspective

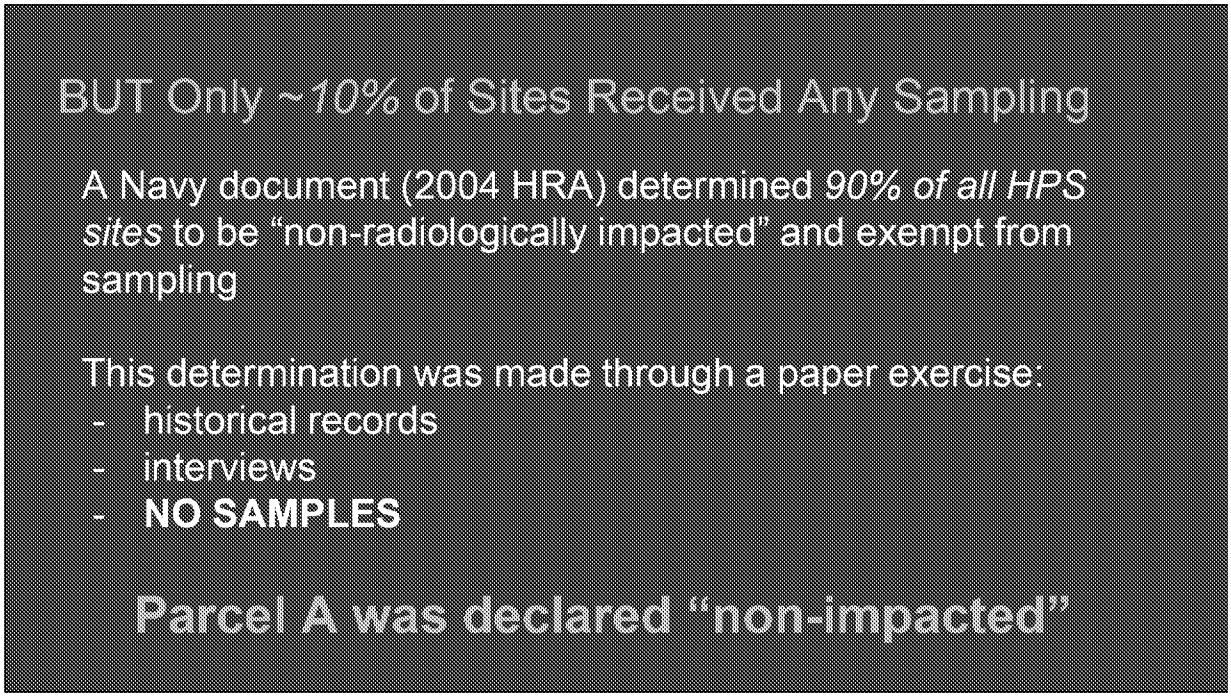
- **60,000 curies of strontium-90/yttrium-90**
  could contaminate more than ten trillion tons of soil at EPA's default Superfund preliminary remediation goal (PRG)

- **2,426 pounds of depleted uranium**
  could contaminate more than 200 million metric tons of soil above EPAs default Superfund preliminary remediation goal

- **2,000 grams of plutonium-239:**
  a millionth of an ounce if inhaled will cause cancer with a virtual 100% statistical certainty



Tens of thousands of barrels of radioactive waste were stored at HPS where leaks could have further contaminated the site.

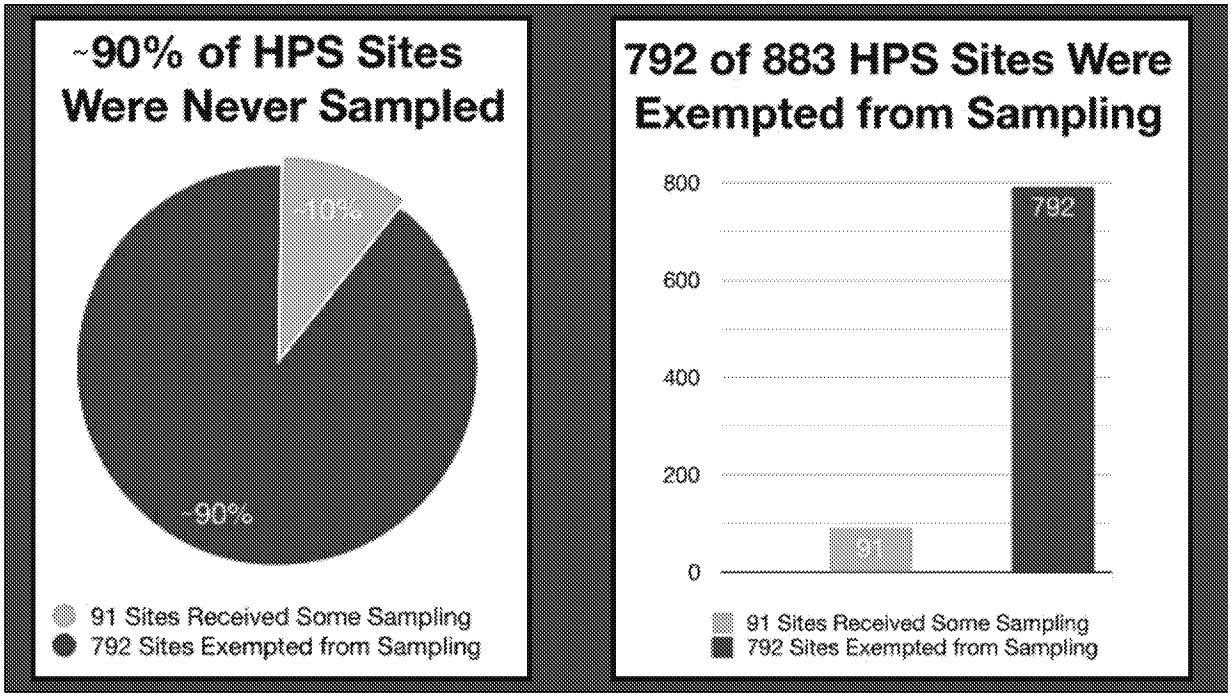


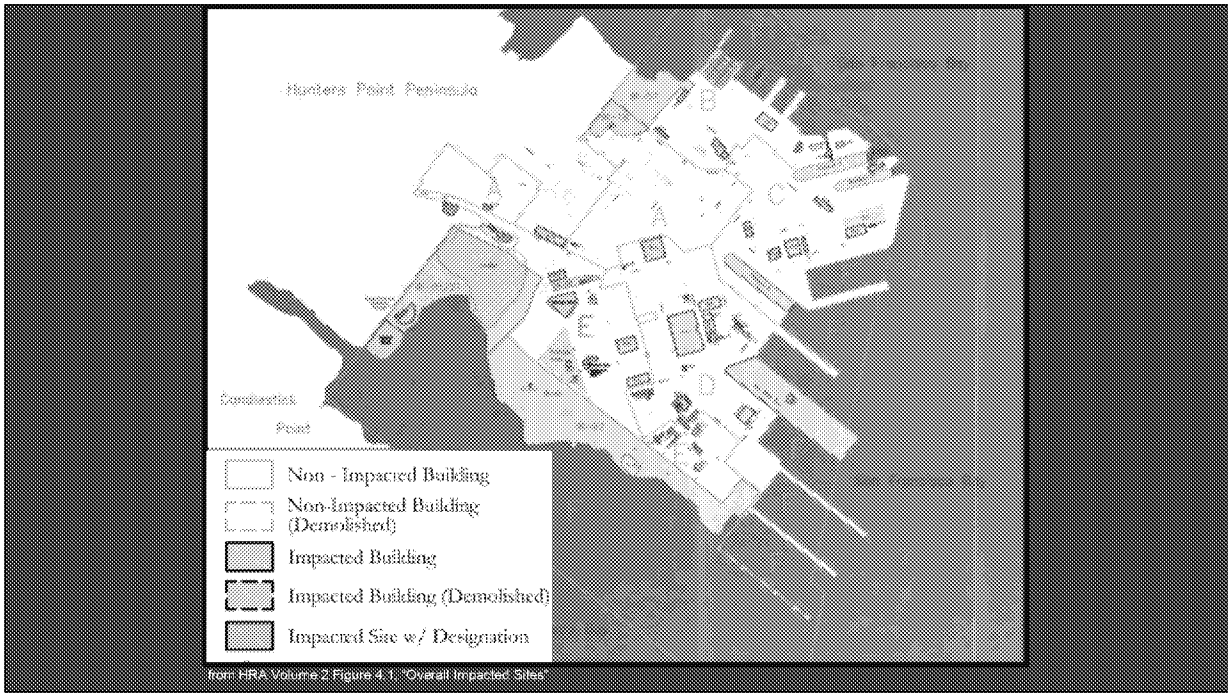
The HRA (Historical Radiological Assessment, 2004) determined 90% of all HPS sites to be "non-radiologically impacted"

This determination was made through what was a paper exercise:
historical records, interviews, etc. NO SAMPLES were taken to determine that those sites were contamination free

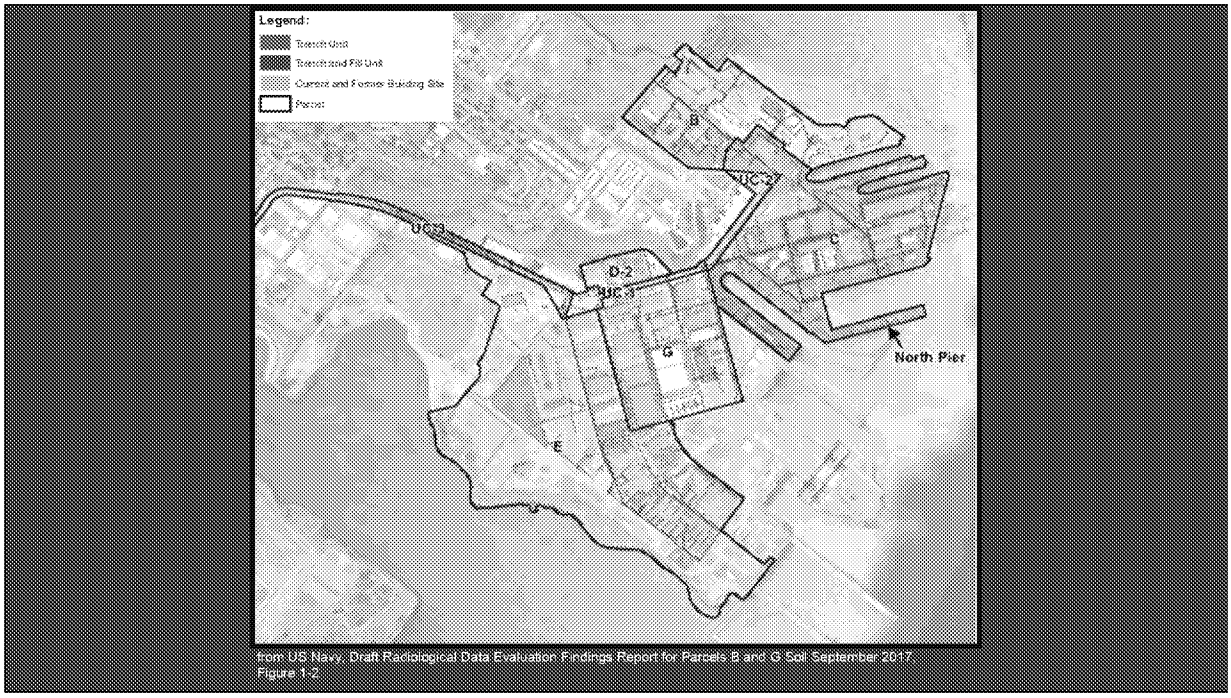
Therefore, only that 10%, which had documents indicating discrete spills or activities occurred, were considered to have potential contamination

Leaving 90% of sites with no sampling

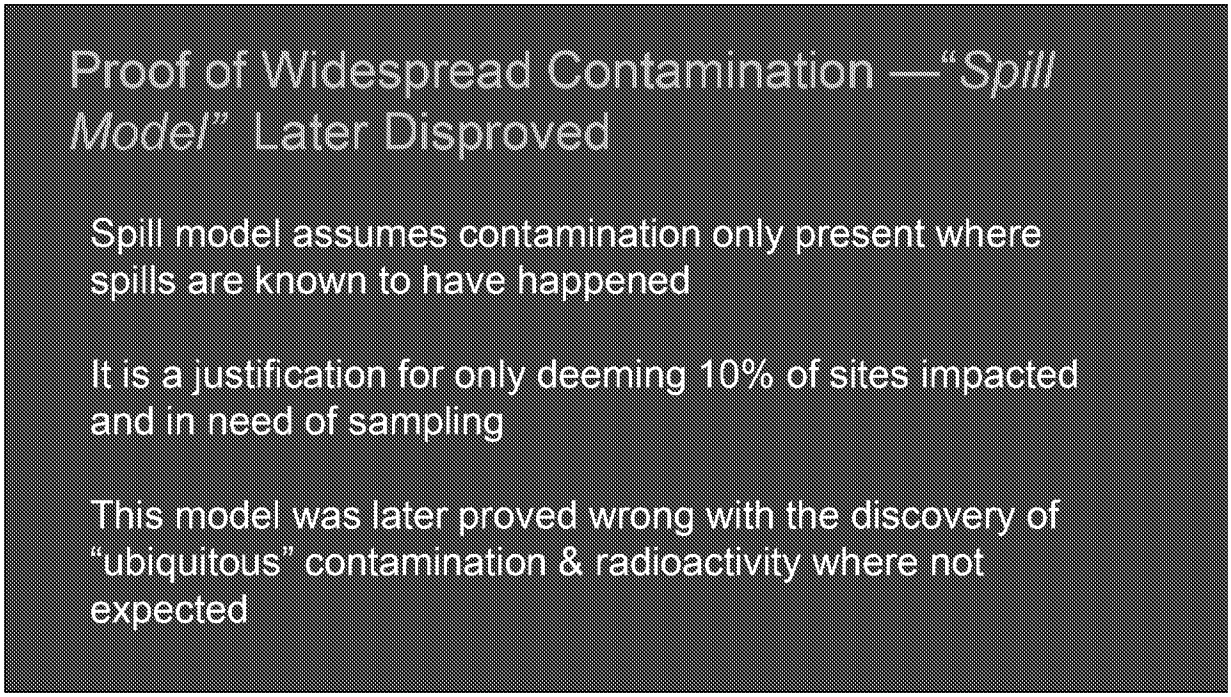

~90% of HPS Sites Were Never Sampled
~10%
~90%
91 Sites Received Some Sampling
792 Sites Exempted from Sampling
792 of 883 HPS Sites Were Exempted from Sampling
800
600
400
200
0
91
792
91 Sites Received Some Sampling
792 Sites Exempted from Sampling



from HRA Volume 2 Figure 4.1, "Overall Impacted Sites"



from US Navy, Draft Radiological Data Evaluation Findings Report for Parcels B and G Soil September 2017
Figure 1-2



This model for determining contamination is known as the "spill model". I.e. contamination is only present where specific spills or events are known to have occured.

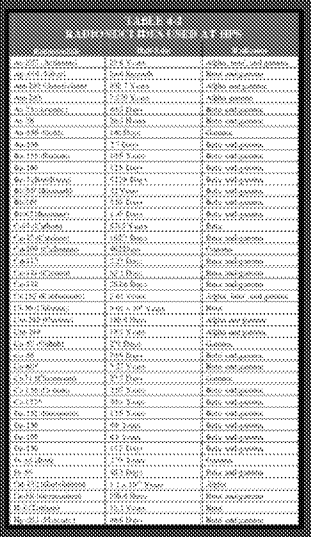
Upon further investigation however, this model was found faulty. Contractors found what they call "ubiquitous" contamination. In other words, contamination is widespread, and the spill model no longer holds.

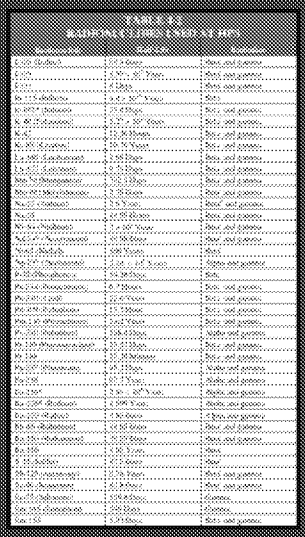
This is aligned with our understanding of contamination at HPS, because so many activities were likely to have spread contaminants across the entire site

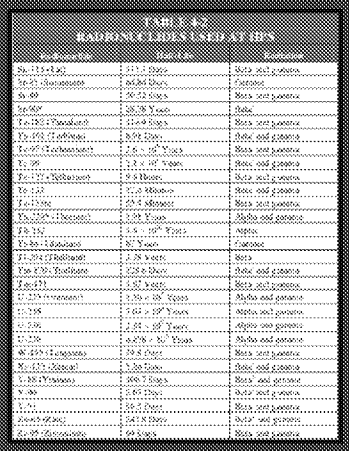
The Testing That *Did* Occur Was Deeply Flawed

- ➢ Excluding almost all Radionuclides of Concern
- ➢ Using extremely outdated cleanup goals
- ➢ Inflating background measurements

Great Majority of Radionuclides Excluded from Testing



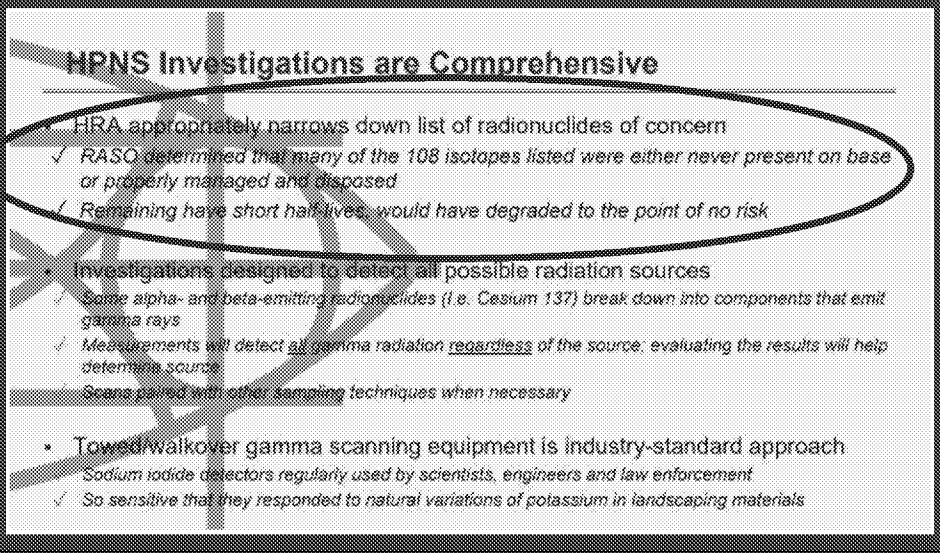




Over 100 radionuclides used

from US Navy. 2004 Historical Radiological Assessment Volume 2, Table 4-2

The Navy falsely claims the great majority of these radionuclides were not in fact used at Hunters Point…



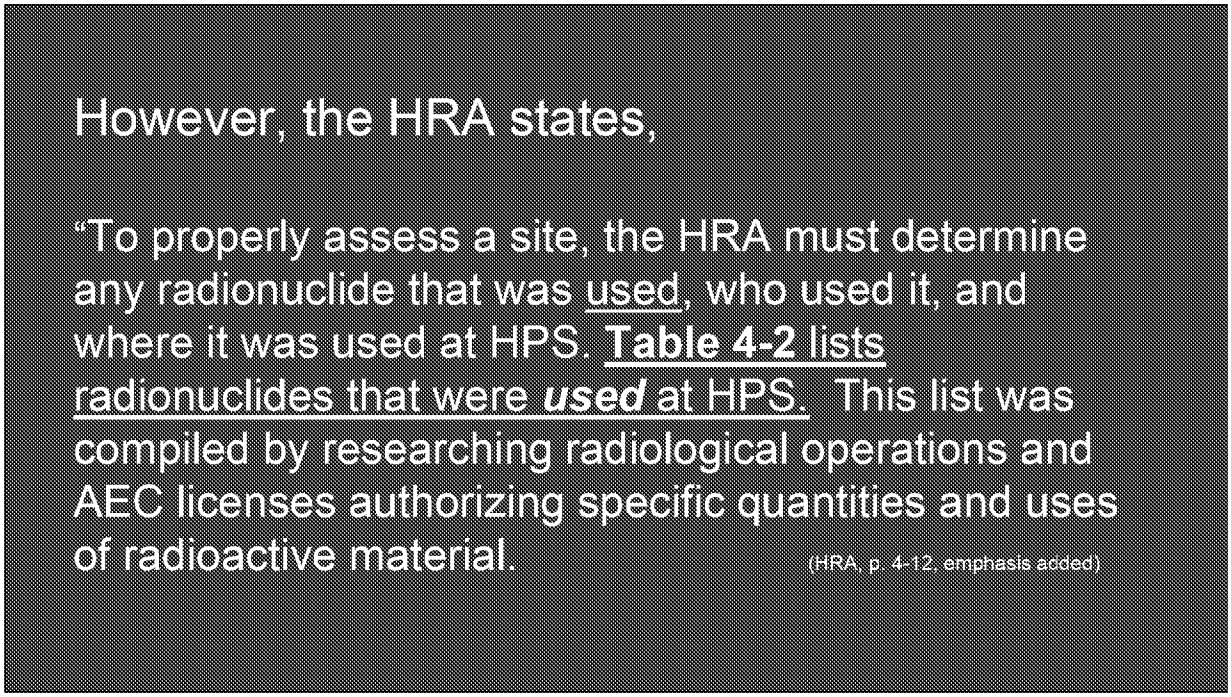
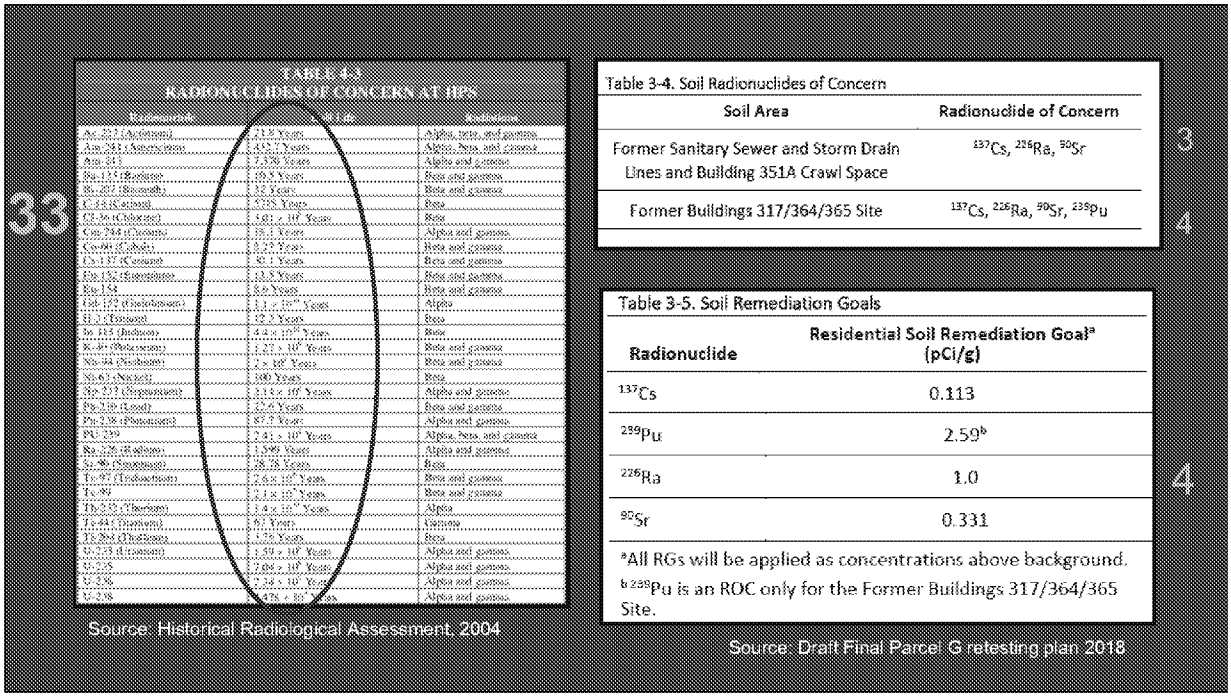


Table 4-2 is the table a couple slides back, which we had correctly said were the radionuclides used at HPS.

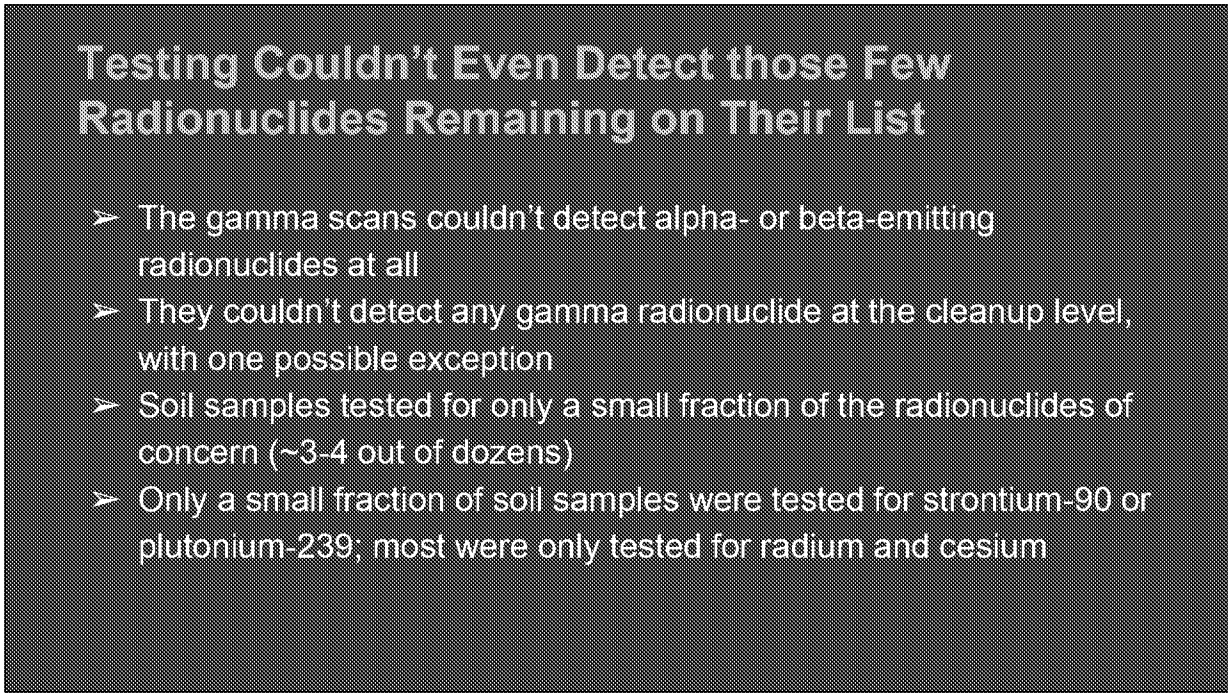
The Navy also falsely claims that all but 3 or 4 of the radionuclides would have decayed away.

However, the HRA states, "Any radionuclide that could have decayed through 10 half-lives since its time of use at HPS is no longer considered a radionuclide of concern. **Table 4-3 lists the radionuclides that potentially are still a concern at HPS today**."

(HRA, p. 4-12, emphasis added)



Navy in the HRA admitted to 33 ROCs at HPS, but then in its testing and cleanup plans only considers 3 or 4 of them.

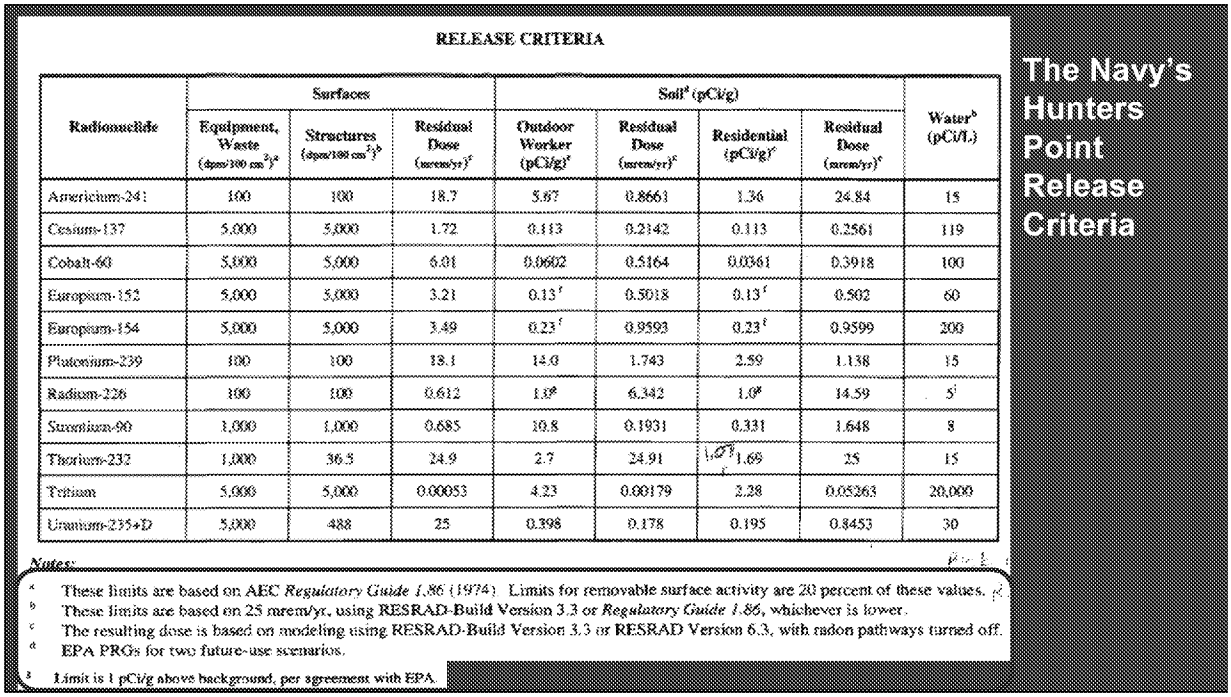


Most of the measurements were gamma scans that could detect no alpha, no beta, and for gamma, couldn't detect most gamma at the cleanup levels. What soil samples were taken were primarily measured for only radium and cesium. Only every tenth sample was checked for strontium-90, and even less than that for plutonium. They generally weren't measured for any others of the 33 ROCs.

Under the Superfund Law, the Navy Is Required to Use Standards Consistent with EPA's Superfund Guidance, But Failed to Do So

Under section 120(a)(2) of the Superfund law (the Comprehensive Environmental Response, Compensation, and Liability Act, or CERCLA), a Superfund site such as HPS that is owned by a federal entity, in this case the Navy, is ***barred from using cleanup criteria that are inconsistent with EPA's Superfund guidance***:

No department, agency, or instrumentality of the United States may adopt or utilize any such guidelines, rules, regulations, or criteria which are inconsistent
with the guidelines, rules, regulations, and criteria established by the [EPA] Administrator under this chapter.



Radionuclide	Surfaces			Soil[a] (pCi/g)				Water[b] (pCi/L)
	Equipment, Waste (dpm/100 cm²)[a]	Structures (dpm/100 cm²)[b]	Residual Dose (mrem/yr)[c]	Outdoor Worker (pCi/g)[d]	Residual Dose (mrem/yr)[c]	Residential (pCi/g)[d]	Residual Dose (mrem/yr)[c]	
Americium-241	100	100	18.7	5.67	0.8661	1.36	24.84	15
Cesium-137	5,000	5,000	1.72	0.113	0.2142	0.113	0.2561	119
Cobalt-60	5,000	5,000	6.01	0.0602	0.5164	0.0361	0.3918	100
Europium-152	5,000	5,000	3.21	0.13[f]	0.5018	0.13[f]	0.502	60
Europium-154	5,000	5,000	3.49	0.23[f]	0.9593	0.23[f]	0.9599	200
Plutonium-239	100	100	18.1	14.0	1.743	2.59	1.138	15
Radium-226	100	100	0.612	1.0[g]	6.342	1.0[g]	14.59	5[f]
Strontium-90	1,000	1,000	0.685	10.8	0.1931	0.331	1.648	8
Thorium-232	1,000	36.5	24.9	2.7	24.91	1.68 1.68	25	15
Tritium	5,000	5,000	0.00053	4.23	0.00179	2.28	0.05263	20,000
Uranium-235+D	5,000	488	25	0.398	0.178	0.195	0.8453	30

Notes:

[a] These limits are based on AEC *Regulatory Guide 1.86 (1974)*. Limits for removable surface activity are 20 percent of these values.
[b] These limits are based on 25 mrem/yr, using RESRAD-Build Version 3.3 or *Regulatory Guide 1.86*, whichever is lower.
[c] The resulting dose is based on modeling using RESRAD-Build Version 3.3 or RESRAD Version 6.3, with radon pathways turned off.
[d] EPA PRGs for two future-use scenarios.
[f] Limit is 1 pCi/g above background, per agreement with EPA.

Note the footnotes. Building release criteria were based on AEC Reg. Guide 1.86, from 1974. Soil release criteria were, as seen in next slide, based on 1991 PRGs. These outdated standards are used in all subsequent RODs, including those issued recently.

HPS Cleanup Goals Are Extremely Outdated & Inconsistent with EPA CERCLA Guidance

During a presentation before the Citizens Advisory Committee, a speaker for the Navy stated that the cleanup goals were from 2006, but **this is not true.** While the goals were first set forth in a 2006 Navy document (the Basewide Action Memorandum), and repeated over the years in subsequent RODs, **the soil goals themselves came from EPA 1991 PRG standards** and **the building standards from a 1974 AEC guidance (Reg. Guide 1.86)**. As the Navy stated:

The cleanup goals presented in this AM were derived by considering the following:

- Soil cleanup goals: EPA decay-corrected PRGs (EPA, 1991)
- Radium-226 contamination in soils: per agreement with EPA
- Radioactive contamination on structures. These limits are based on 25 millirem per year (mrem/y), using RESRAD or Atomic Energy Commission's (AEC's) *Regulatory Guide 1.86* (1974) whichever is lower.

Cleanup Goals for Removable Contamination in Buildings Are Extremely Outdated

Radionuclide	EPA Building Preliminary Remediation Goal ($dpm/100\ cm^2$)	Navy's Hunters Point Release Criterion for Buildings and Structures ($dpm/100\ cm^2$)	How many times weaker are the Navy's Remediation goals?
Cesium-137	0.744	1000	**1,283** times weaker
Cobalt-60	0.779	1000	**1,345** times weaker
Europium-152	0.539	1000	**1,854** times weaker
Europium-154	1.170	1000	**855** times weaker
Uranium-235	0.024	97.6	**4,148** times weaker

Cancer Risk Estimates from EPA's Building Preliminary Remediation Goal (BPRG) Calculator for Exposure to Removable Contamination Inside Buildings at Navy's Hunters Point Cleanup Levels

Radionuclide	Navy's Hunters Point Cleanup Level for Buildings (pCi/cm²)	Risk to Residents Using EPA Building PRG Calculator	How Many Times Higher Cancer Risk is the Navy's Hunters Point Cleanup Levels than EPA's Maximum Allowable Risk Level (1 in 10,000)	How Many Times Higher Cancer Risk is the Navy's Hunters Point Release Criterion Than EPA's Risk Goal (1 in 1,000,000)
Americium-241 (Am-241)	0.090	9.2×10^{-4}	9	**920**
Cesium-137 (Cs-137)	4.505	1.28×10^{-3}	13	**1280**
Cobalt-60 (Co-60)	4.505	1.34×10^{-3}	13	**1340**
Europium-152 (Eu-152)	4.505	1.86×10^{-3}	19	**1860**
Europium-154 (Eu-154)	4.505	8.55×10^{-4}	9	**855**
Plutonium-239 (Pu-239)	0.090	9.8×10^{-4}	10	**980**
Radium-226 (Ra-226)	0.090	3.29×10^{-3}	33	**3290**
Strontium-90 (Sr-90)	0.901	7.81×10^{-4}	8	**781**
Thorium-232 (Th-232)	0.033	6.13×10^{-4}	6	**613**
Uranium-235 +D (U-235)	0.440	4.14×10^{-3}	41	**4140**
Total Risk		**1.59×10^{-2} ≈ 1 out of 63 people will get cancer**		

pCi= picocuries

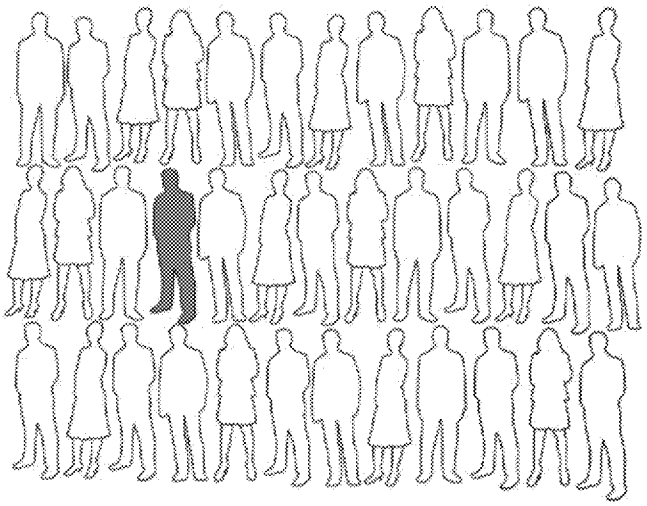
Cleanup Goals for External Radiation from Buildings Are Extremely Outdated

Radionuclide	EPA Building Preliminary Remediation Goal (dpm/100 cm^2)	Navy's Hunters Point Release Criterion for Buildings and Structures (dpm/100 cm^2)	How many times weaker are the Navy's Remediation goals?
Cesium-137	11.21	5000	**446** times weaker
Cobalt-60	1.27	5000	**3,925** times weaker
Europium-152	1.74	5000	**2,876** times weaker
Europium-154	2.14	5000	**2,341** times weaker
Uranium-235	7.17	488	**68** times weaker

Cancer Risk Estimates from EPA's Building Preliminary Remediation Goal (BPRG) Calculator for External Exposure to Radiation Inside Buildings at Navy's HPS Cleanup Levels

Radionuclide	Navy's Hunters Point Cleanup Level for Buildings (pCi/cm²)	Residential Cancer Risk from Navy HPS Building Cleanup Level, Using EPA BPRG Calculator	Ratio of the Cancer Risk from the Navy's HPS Building Cleanup Level to EPA's Highest Risk Allowed (1 in 10,000)	How Many Times Higher Cancer Risk is the Navy's HPS Cleanup Level than EPA's Risk Goal (1 in 1,000,000)
Americium-241 (Am-241)	0.451	1.70×10^{-6}	0.2	**17**
Cesium-137 (Cs-137)	22.523	4.46×10^{-5}	**4**	**446**
Cobalt-60 (Co-60)	22.523	3.92×10^{-3}	**39**	**3920**
Europium-152 (Eu-152)	22.523	2.88×10^{-3}	**29**	**2880**
Europium-154 (Eu-154)	22.523	2.34×10^{-3}	**23**	**2340**
Plutonium-239 (Pu-239)	0.451	1.40×10^{-5}	0.1	**14**
Radium-226 (Ra-226)	0.451	3.72×10^{-6}	0.4	**37**
Strontium-90 (Sr-90)	4.505	3.25×10^{-11}	0	0
Thorium-232 (Th-232)	0.164	2.75×10^{-6}	0.3	**28**
Uranium-235 +D (U-235)	2.198	6.81×10^{-6}	0.7	**68**
Total Risk	**9.75×10^{-3} = 1 in every 103 people will develop cancer**			

pCi= picocuries

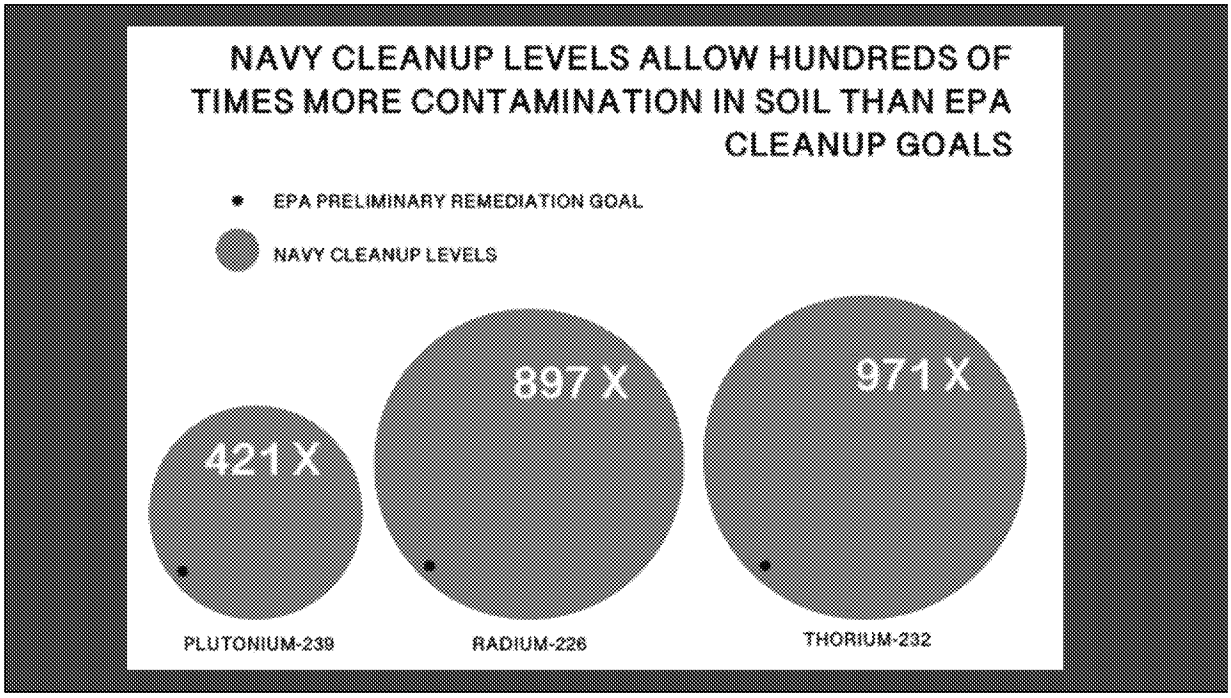


1 in 37

The combined risk from the external and removable contamination allowed under the Navy's building cleanup standards

Soil Cleanup Goals Are Extremely Outdated

Radionuclide	2018 EPA Default PRG for soil (pCi/g)	Navy Remediation Goals for Soil (pCi/g)	How many times weaker are the Navy's Remediation goals?
Cesium-137	0.0303	0.113	**4** times weaker
Plutonium-239	0.0062	2.59	**421** times weaker
Radium-226	0.0018	1.633	**897** times weaker
Strontium-90	0.0036	0.331	**92** times weaker
Thorium-232	0.0017	1.69	**971** times weaker
Uranium-235	0.0062	0.195	**31** times weaker


NAVY CLEANUP LEVELS ALLOW HUNDREDS OF TIMES MORE CONTAMINATION IN SOIL THAN EPA CLEANUP GOALS
EPA PRELIMINARY REMEDIATION GOAL
NAVY CLEANUP LEVELS
421 X
897 X
971 X
PLUTONIUM-239
RADIUM-226
THORIUM-232

Cancer Risk Estimates from EPA's Preliminary Remediation Goal (PRG) Calculator for Exposure to Soil at Navy's Cleanup Levels

Radionuclide	Navy Hunters Point Residential Cleanup Levels for Soil (pCi/g)	EPA PRG Calculator Estimate of Cancer Risk from Navy's Hunters Point Residential Cleanup Levels	Ratio of the Cancer Risk from the Navy's HPS Soil Cleanup Level to EPA's Highest Risk Allowed (1 in 10,000)	How Many Times Higher Cancer Risk is the Navy's HPS Cleanup Level than EPA's Risk Goal (1 in 1,000,000)
Americium-241 (Am-241)	1.360	1.30×10^{-4}	**1.3**	**130**
Cesium-137 (Cs-137)	0.113	3.73×10^{-5}	0.04	**4**
Cobalt-60 (Co-60)	0.252	3.13×10^{-4}	0.31	**31**
Europium-152 (Eu-152)	0.130	6.26×10^{-5}	0.06	**6**
Europium-154 (Eu-154)	0.230	1.18×10^{-4}	0.12	**12**
Plutonium-239 (Pu-239)	2.590	4.21×10^{-4}	**4.21**	**421**
Radium-226 (Ra-226)	1.633	8.95×10^{-4}	**8.95**	**895**
Strontium-90 (Sr-90)	0.331	9.17×10^{-5}	**0.92**	**92**
Thorium-232 (Th-232)	1.690	9.74×10^{-4}	**9.74**	**974**
Tritium (H-3)	2.280	3.73×10^{-5}	0.37	**37**
Uranium-235 +D (U-235)	0.195	3.13×10^{-4}	0.31	**31**
Total Risk	**2.63×10^{-3} 1 in every 380 people will get cancer**			

pCi= picocuries

Navy's Claims at CAC Meeting January 28, 2019

Remedial Goals - Soil

Radionuclide	Navy Remedial Goal*	2019 EPA Dose Compliance Concentration Remedial Goal at 12 mrem/year*	Calculated by other Others*
Cesium-137	0.113	11	0.0303
Plutonium-239	2.59	259	0.0062
Radium-226	1	3.0	0.0018
Strontium-90	0.331	611	0.0036
Thorium-232	1.69	2.4	0.0017
Uranium-235	0.195	48	0.0062

* Values reported in picoCuries per gram

NAVFAC

Inaccuracies in Navy Claims

- "Calculated by other Others [sic]"--"Others" are EPA's own Default PRGs
- One is supposed to use EPA's PRG Calculator, not the Dose Compliance Calculator
- EPA's standard is NOT 12 millirem/year

Navy Slide at CAC Meeting January 28, 2018

The Navy's Clean-up Goals are Conservative and Protective of Human Health

- Existing HPNS clean-up goals are some of the most conservative in the BRAC Program
  - Validated with EPA PRG Calculator: Well within CERCLA guidance of 10^{-4} to 10^{-6} additional risk
  - Cleanup goals also under EPA standard of 12 mrem/year dose
- Calculations made by experts in coordination with US EPA
  - Farming/consumption of produce from shipyard soils is prohibited

KEY FACTS:

- U.S. Nuclear Regulatory Commission licensed operations standard is 25 mrem/year
- EPA standard: 12 mrem/year
- No reports have shown more than 6 mrem/year

NAVFAC

EPA's standard is NOT 12 millirem/year

EPA's standard is 10^{-6} risk, which can under certain circumstances, based on the 9 balancing and other criteria, fall back, but to no more than 10^{-4}

One is supposed to use risk, not dose. One is supposed to use the PRG calculator, not the dose compliance calculator (DCC).

DCC is only if there is an ARAR that does not exceed 12 millirem/year. There is no such ARAR in California.

The Navy claims its new, far higher (less protective) soil figures are based on EPA calculators with two changes:

1. Using San Francisco meteorology instead of Minneapolis
2. No garden

The Navy Falsely Claims Default Values are Inappropriate for SF Weather Conditions

The Navy asserts that EPA Default PRG inputs are not reflective of San Francisco meteorology. This is false. Changing the default to San Francisco meteorology makes no difference in the PRGs.

Radionuclide	PRGs With San Francisco Meteorology	PRGs with Default Meteorology
Cesium-137	0.0303 pCi/g	0.0303 pCi/g
Plutonium-239	0.0062 pCi/g	0.0062 pCi/g
Radium-226	0.0018 pCi/g	0.0018 pCi/g
Strontium-90	0.0036 pCi/g	0.0036 pCi/g
Thorium-232	0.0017 pCi/g	0.0017 pCi/g
Uranium-235	0.0062 pCi/g	0.0062 pCi/g

Navy shifts from remediating to covering up contamination

The 1997 Record of Decision for Parcel B called for excavation and off-site disposal of contaminated soil. (1997 Parcel B ROD, p. 49, 65)

Work at Parcel B found far more contamination than the Navy had anticipated. (Amended Parcel B ROD, p. 1-5)

In the 2009 Amended ROD for Parcel B, the Navy changed its remedy to rely on covering rather than removing contamination:

> "...the consideration of parcel-wide covers to address soil contamination instead of excavation represents a fundamental change in the scope of the remedy for soil." (Amended Parcel B ROD, p. 1-4)

Remedy relies primarily on “durable covers,” which are defined in the RODs as 2 feet (or in some cases 3) of “clean soil”
or 4 inches of asphalt.

Soil Covers for Hunters Point Shipyard

Amended Parcel B ROD:

"The amended selected remedy includes the installation of durable soil covers to prevent contact with any [Contaminants of Concern] that are not excavated. Covers will be required at all redevelopment blocks to prevent human exposure.... .... [C]overs could include a minimum 4 inches of asphalt or a minimum 2 feet of *clean imported soil*. (p. 12-7, emphasis added).

Soil Covers For Parcel B cont.

"Add a 1-foot-thick layer of clean *soil* above the surveyed surface over the portion of IR-07 and IR-18 that is radiologically impacted. . . . Install a new *2-foot-thick soil cover* over all of IR-07 and IR-18," (p. 12-2, emphasis added).

"It is estimated from aerial photographs of Parcel B that *approximately 16 acres will be covered with soil*, 3 acres will be covered by the shoreline revetment, and 40 acres of existing asphalt and concrete surfaces (including buildings) will be used and repaired, as necessary," (p. 12-7, emphasis added).

Soil Covers at Hunters Point for Parcel E

"Durable covers would be applied across all of Parcel E as physical barriers to cut off potential exposure to residual contamination that remains in soil after excavation. Durable covers at Parcel E would consist of asphalt and concrete surfaces in the northern half of Parcel E (the Shipyard South Multi-Use District) and *a 2-foot thick soil cover* in the southern half and in small areas on the western edge of Parcel E (the Shipyard Shoreline Open Space District)." (Parcel E ROD, p. 2-48, emphasis added).

Soil Covers at Hunters Point for Parcel E-2

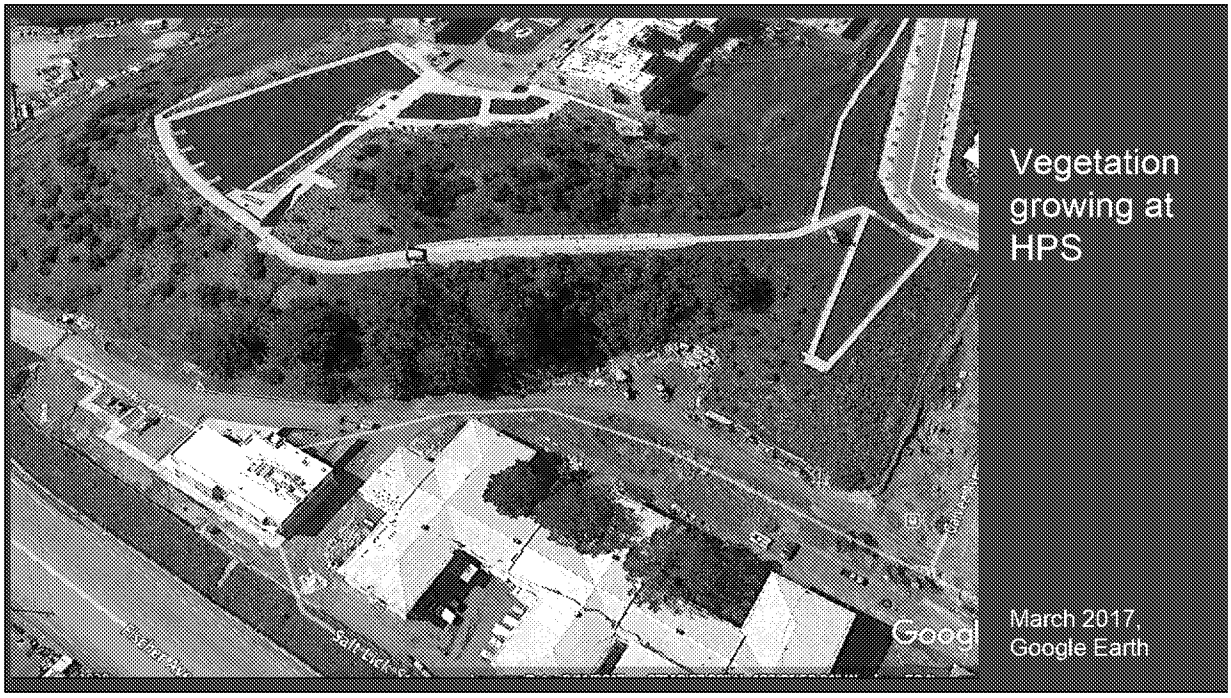
"Following completion of the final radiological survey and placement of radiologically screened material from the excavations shown on Figure 13, a minimum *2-feet-thick soil cover* would be placed over all of Parcel E-2, including a small portion of the Parcel E-2 Landfill that extends north onto property owned by UCSF (see Figure 2)." (Parcel E-2 ROD, p. 2-39, emphasis added)

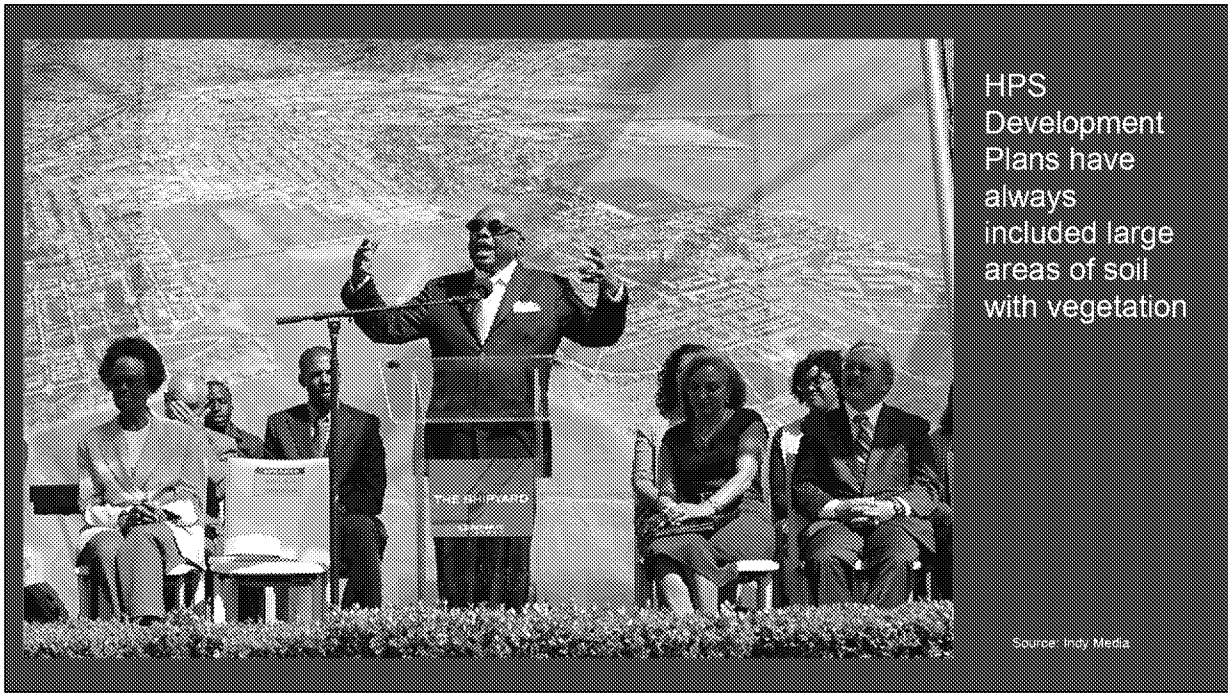
These are just examples for 3 of the parcels. The other parcels have similar language, with the exception of parcels A and D-2, which have been released without any restrictions.

Much of HPS will be dirt with vegetation growing on it.

Large Portions of HPS are Soil With Vegetation

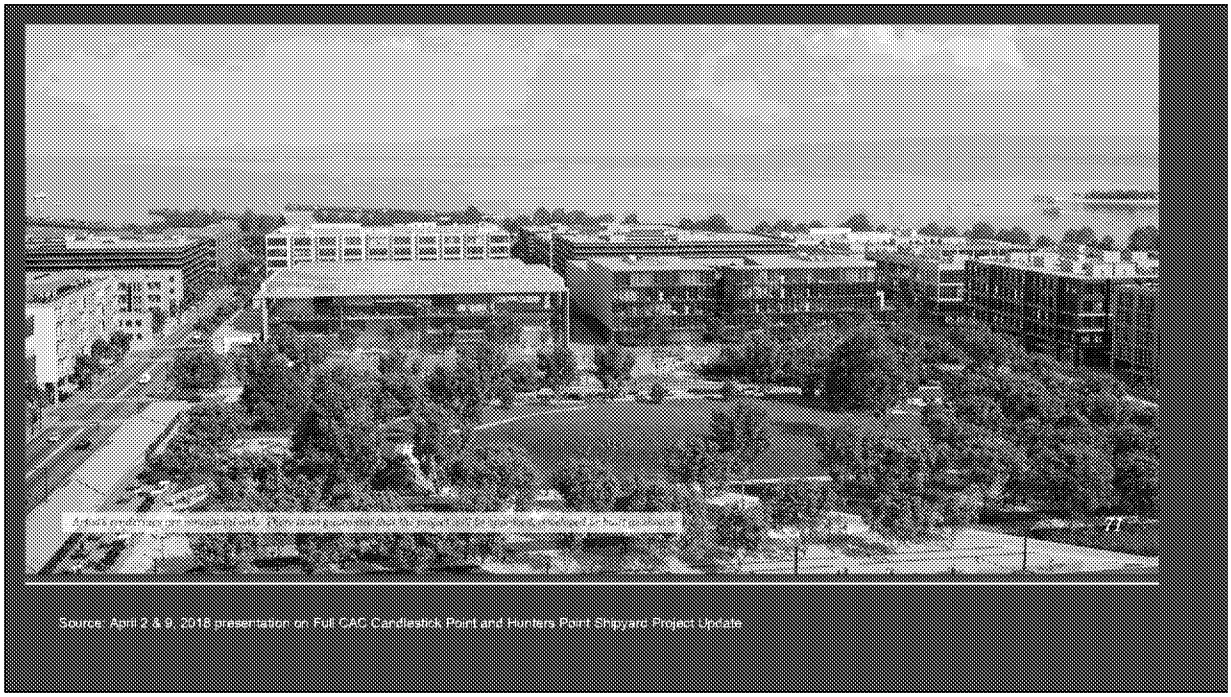
March 2017, Google Earth August 2017, Google Earth


Vegetation growing at HPS
March 2017, Google Earth



https://www.indybay.org/uploads/2019/02/01/brown_willie_shipyard_lennar.jpg

https://sfocii.org/sites/default/files/20180412%20CPHPS2%20Planning%20Commission_FINAL%20Presentation.pdf
April 26, 2018 San Francisco Planning Commission Candlestick Point and Hunters Point Shipyard powerpoint



April 2 and 9th 2018 Full CAC Candlestick Point and Hunters Point Shipyard Project Update
https://sfocii.org/sites/default/files/20180409%20HPS2%20Full%20CAC%20Presentation%20Night%202%20%281%29.pdf

Growing fruits and vegetables
is common in
the Bayview/Hunters Point area.

Fruit tree grown in soil across the street from Parcel A

Source: Google Maps Street View

Source: Linda Parker Pennington

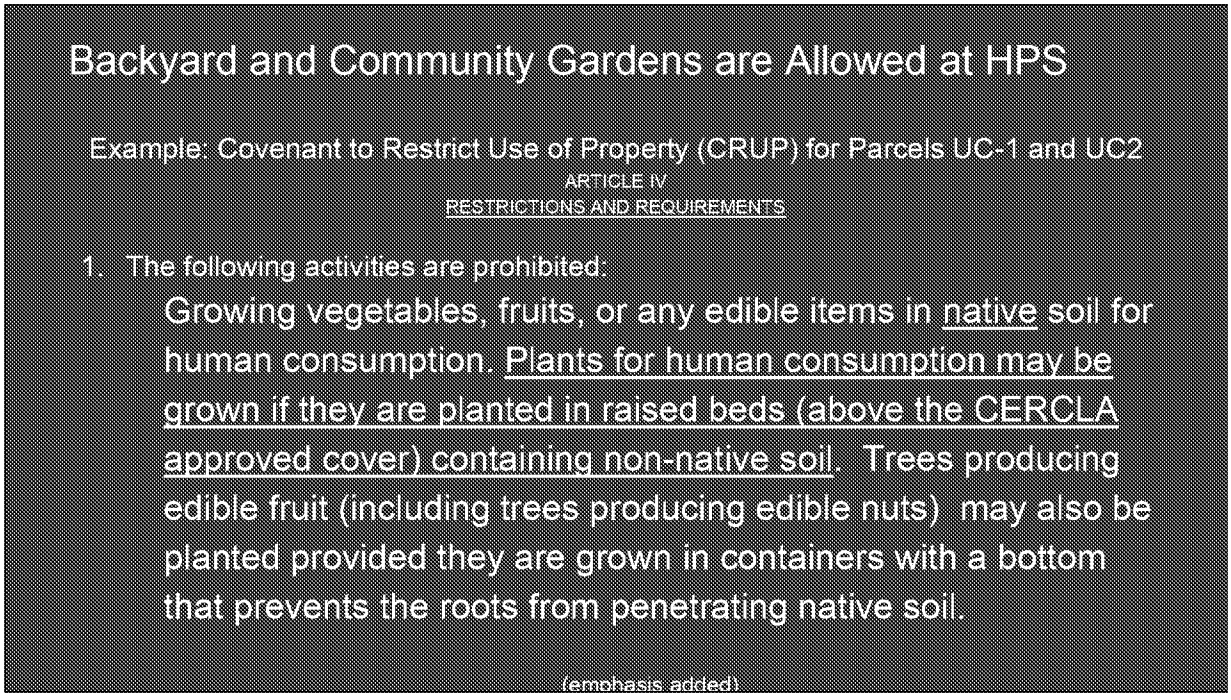

Source: Linda Parker Pennington

Corn and other produce grown at Quesada Community Gardens in Bayview/Hunters Point neighborhood

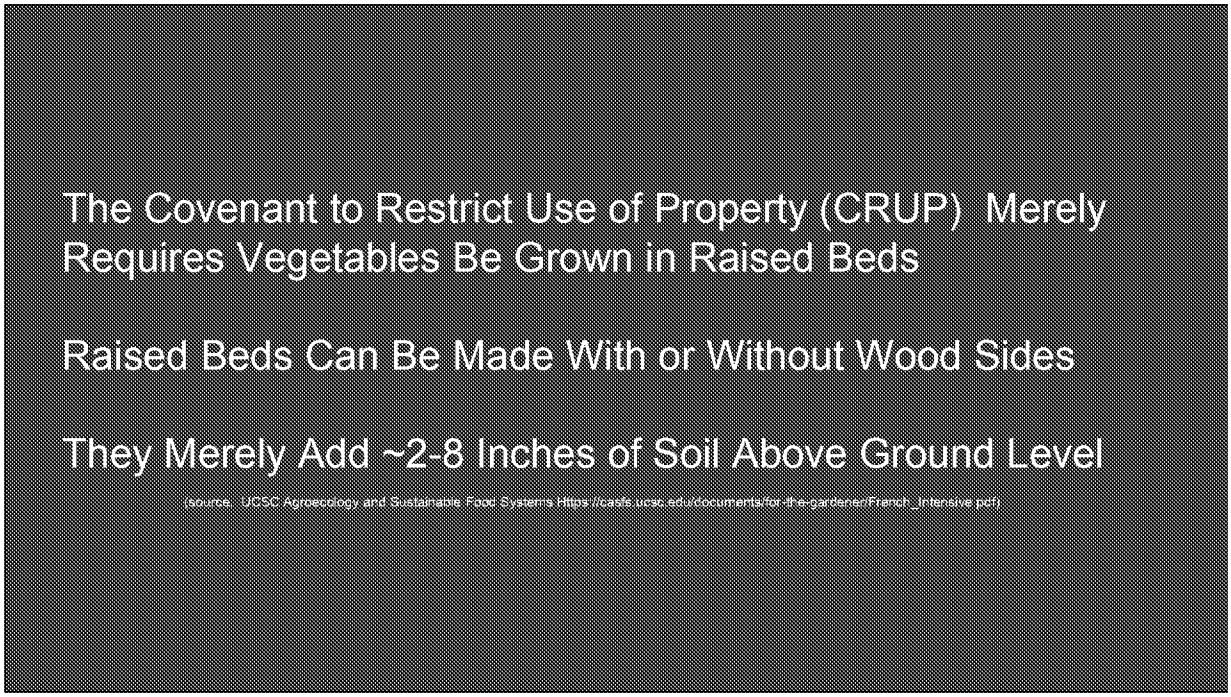
Source: Quesada Gardens

Children growing produce in the soil of a Bayview/Hunters Point street median

Source: Quesada Gardens

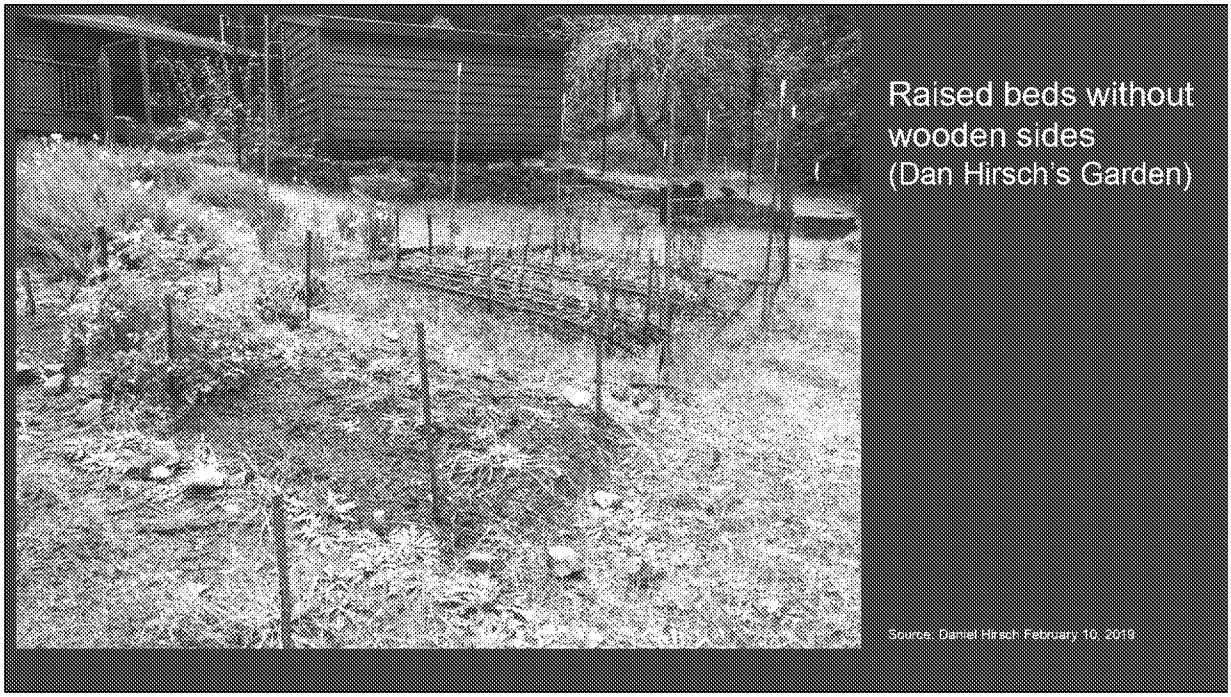


Institutional Controls (ICs) at Hunters Point are documented in the Record of Decisions (ROD) and Covenants to Restrict Use of Property (CRUP). Many of the RODs initially prohibited "growing vegetables or fruits in native soil for human consumption," meaning one could grow them in the "clean" soil over over the native soil. The CRUP, the legal document associated with the ICs, contains somewhat different language, explicitly stating that vegetables are permitted if they are grown in raised beds. Parcel A and D-2 were transferred with NO conditions or restrictions.



https://casfs.ucsc.edu/documents/for-the-gardener/French_Intensive.pdf

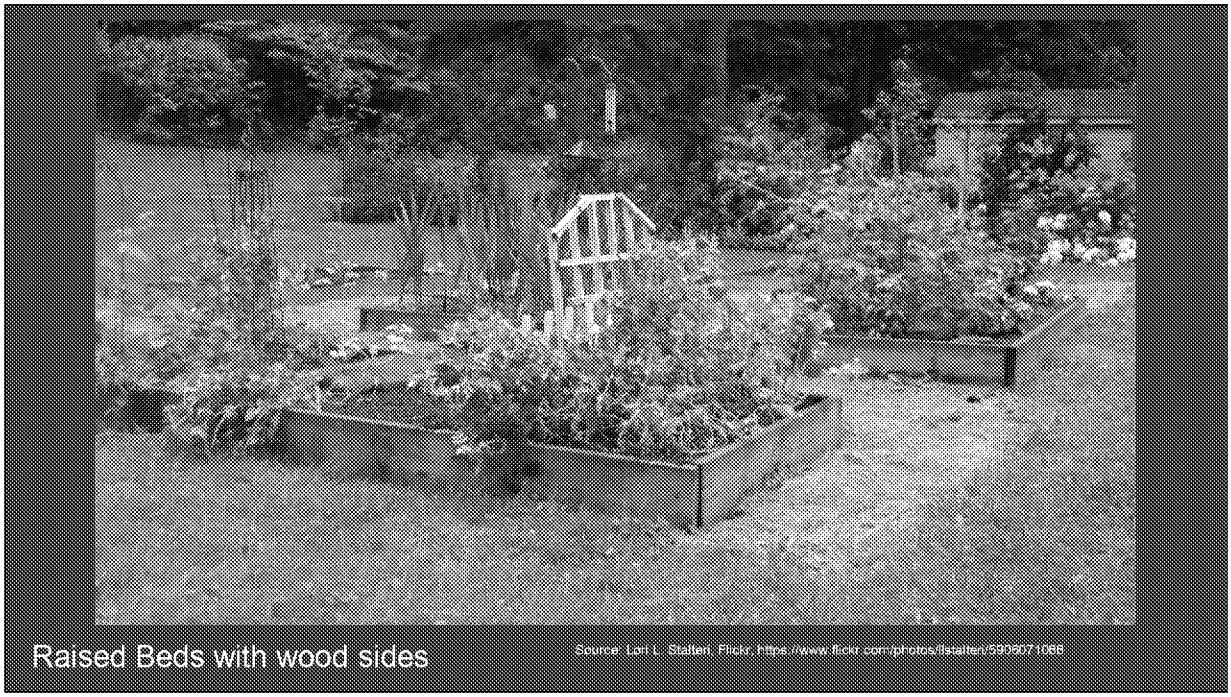
A CRUP does say fruit trees should be grown in closed bottom containers, but all else can be in raised beds.



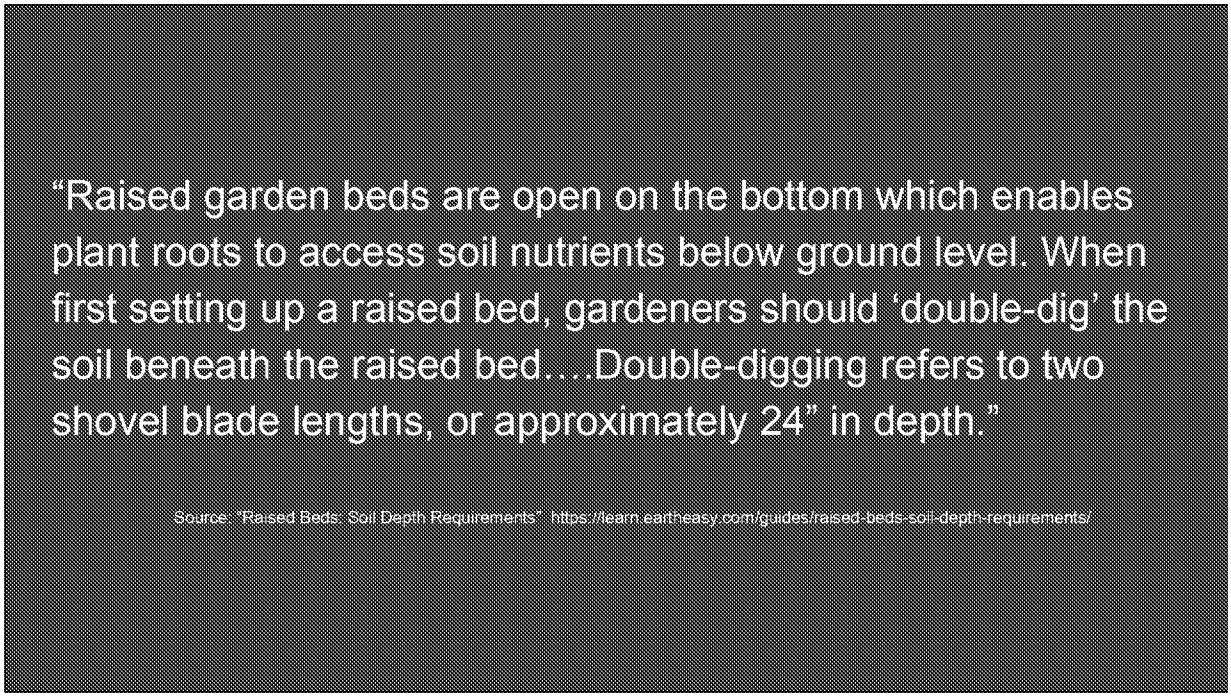
Raised beds without wooden sides
(Dan Hirsch's Garden)

Source: Daniel Hirsch February 10, 2019


Source: Daniel Hixon February 10, 2019



https://learn.eartheasy.com/guides/raised-beds-soil-depth-requirements



Same source indicates wooden sides are generally 11 inches tall, with the soil in them no more than 8 inches

Crop	Maximum root depth (ft)	Crop	Maximum root depth (ft)
Artichoke	3	Melons	5
Asparagus	6	Parsnip	3
Beans (dry)	3	Peas	3.5
Beets	3.5	Peppers	3.5
Berries	4	Pumpkin	4
Cantaloupe	4	Soybeans	4.5
Carrots	3.5	Squash	3
Chard	3.5	Sunflower	5
Cucumber	4	Sweet potatoes	5
Eggplant	4	Tomatoes	5
Grapes	6.5	Turnip (white)	3
Corn (sweet)	4	Watermelon	5

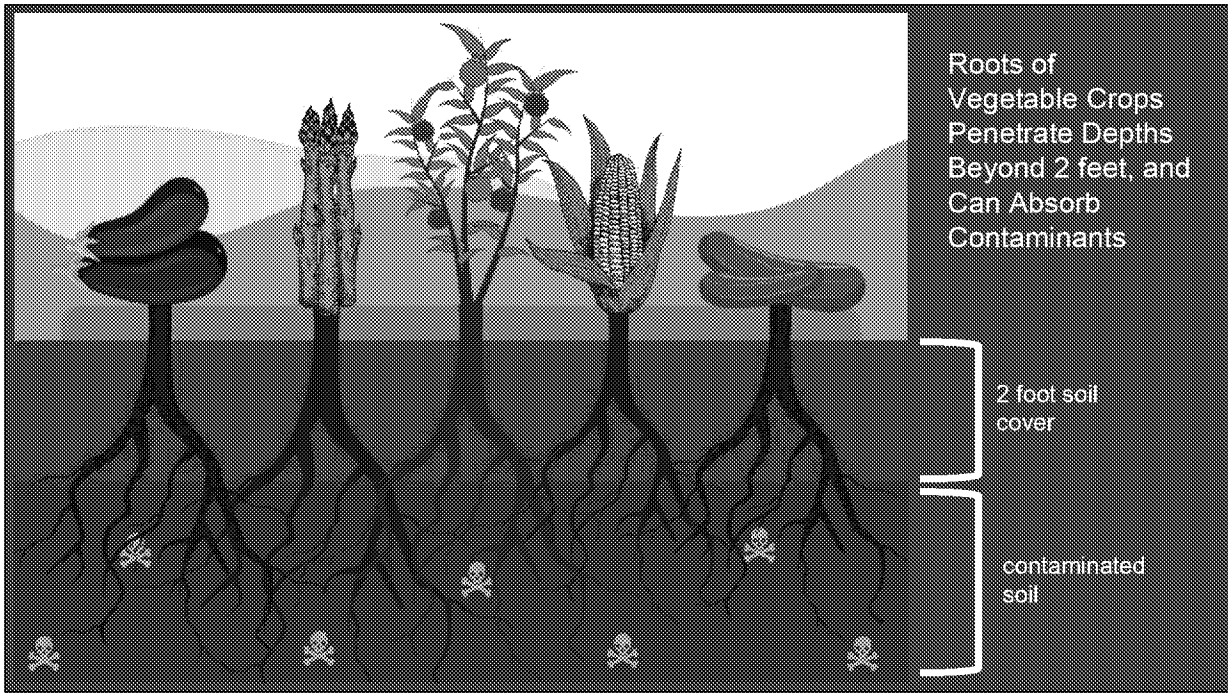
Table 1. Maximum root depth (USDA)

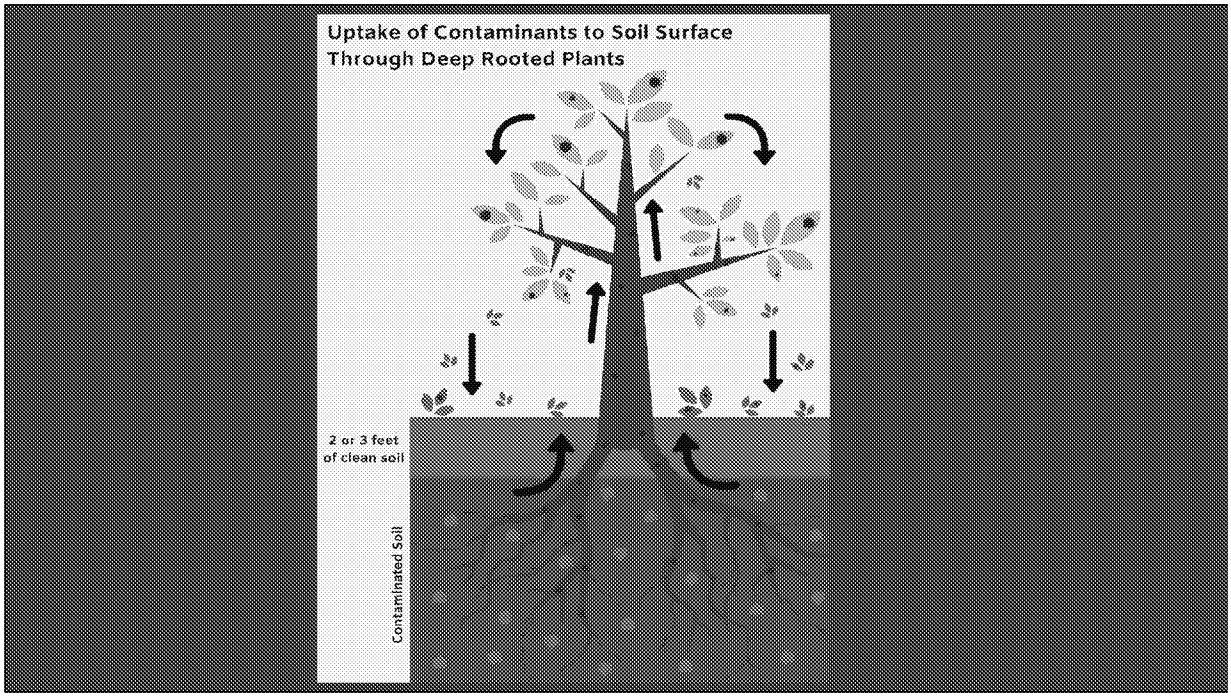
United States Department of Agriculture, Natural Resources Conservation Service, National Engineering Handbook, Section 15: Irrigation, Chapter 11: Sprinkle Irrigation, adapted from Table 11-3

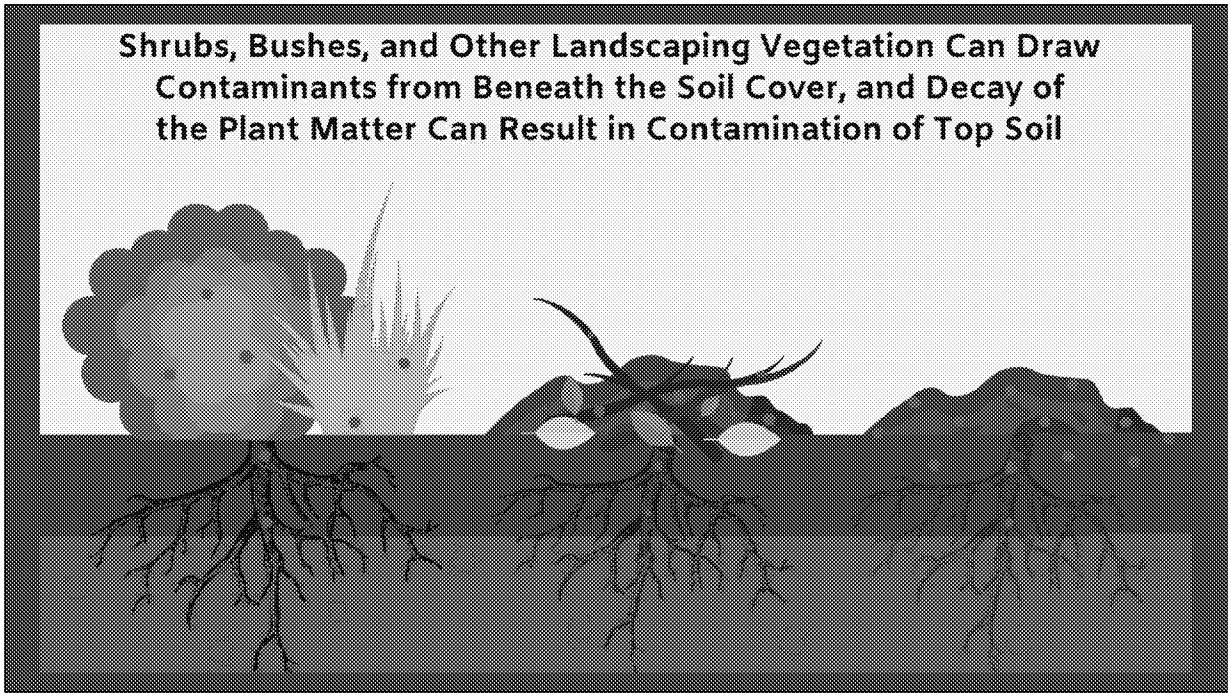
http://www.wcc.nrcs.usda.gov/ftpref/wntsc/waterMgt/irrigation/NEH15/ch11.pdf

Crop	Maximum root depth (ft)	Crop	Maximum root depth (ft)
Asparagus	10.5	Parsnip	9
Bean (kidney)	4	Pea	3
Bean (lima)	5.5	Pepper	4
Beet	10	Pumpkin	6
Cabbage (Copenhaggen Market)	5	Radish (Early Long Scarlet)	3
Carrot	7.5	Rhubarb	8
Cauliflower	4	Rutabaga	5
Cucumber	4	Spinach	6
Eggplant	7	Squash	6
Horseradish	15	Strawberry	3
Kohlrabi	8	Sweet corn	5.5
Lettuce	6	Sweet potato	4
Muskmelon	3.5	Swiss chard	7
Okra	4	Tomato	5.5
Onion (Southport White Globe)	3	Turnip	5.5
Parsley	4	Watermelon	4

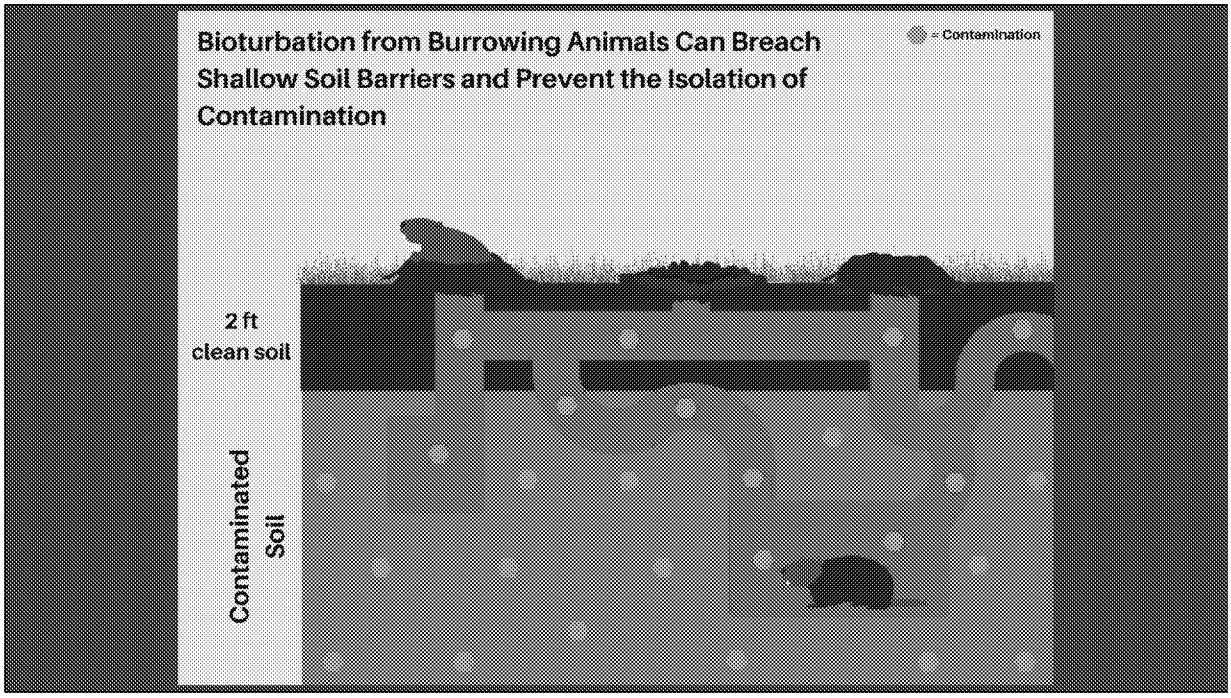
Source:
Weaver, John Ernest, and William Edward Bruner. Root Development Of Vegetable Crops 1st Edn. Mcgraw-Hill Book Co., London, 1927. chapters 2-14


Roots of Vegetable Crops Penetrate Depths Beyond 2 feet, and Can Absorb Contaminants
2 foot soil cover
contaminated soil


Uptake of Contaminants to Soil Surface
Through Deep Rooted Plants
2 or 3 feet
of clean soil
Contaminated Soil


Shrubs, Bushes, and Other Landscaping Vegetation Can Draw
Contaminants from Beneath the Soil Cover, and Decay of
the Plant Matter Can Result in Contamination of Top Soil

Hydraulic Redistribution Can Pull Contaminants
Upwards from Below the Root Zone
Transpiration
Evaporation
Capillary Action
Upward Hydraulic Gradient
(Hydraulic Lift)


Bioturbation from Burrowing Animals Can Breach Shallow Soil Barriers and Prevent the Isolation of Contamination
= Contamination
2 ft clean soil
Contaminated Soil

Mammals Native to Bay Area Whose Burrowing Activities Threaten the Integrity of the Soil Barrier

Species (CA natives)	Max. burrowing depth (ft)
Botta's Pocket Gopher *(Thomomys bottae)*	6
California Ground Squirrel *(Spermophilus beecheyi)*	5.5
Heermann's Kangaroo Rat *(Dipodomys heermanni)*	2.5
California Vole *(Microtus californicus)*	0.5
Broad-footed Mole *(Scapanus latimanus)*	>1
Norway Rat *(Rattus norvegicus)*	4.9
Mountain Beaver *(Aplodontia rufa)*	5.9

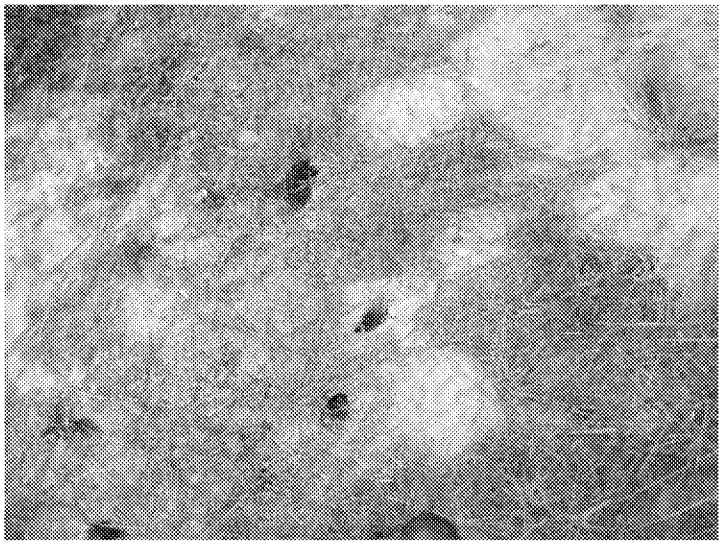
From numerous sources which can be provided upon request

Photograph 15. Large, collapsed burrow near revetment crest in central portion. Second burrow entry at lower left corner of photograph. Burrow scheduled for repair.

Source: Navy Third Five-Year Review, HPNS

In the short time since soil covers have been installed at IR 07/18 (2011), instances of barrier breach by burrowing animals have already occurred

Photos taken on March 1st, 2013



Photograph 14. Small burrows (1 to 2 inches in diameter) in the cover in the northwestern portion of the cover.

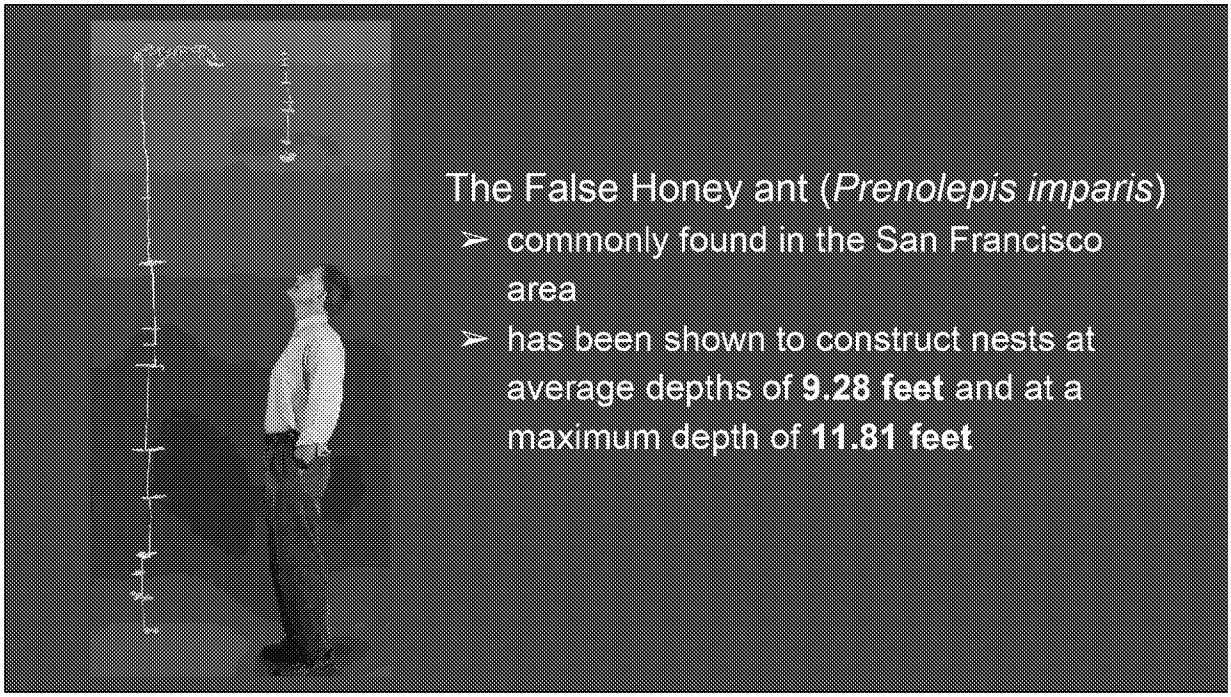
Source: Navy Third Five-Year Review, HPNS

Additional burrows at HPS "durable cover"

Over 100 species of ant are native to California. They build complex nests that reach great depths by excavating soil from deeper layers to the surface. This presents a clear challenge to the integrity of a soil cover.

Species (CA natives)	Max. burrowing depth (ft)
Pogonomyrmex californicus	6.6
Pogonomyrmex occidentalis	>9.8
Pogonomyrmex owyheei	8.9
Pogonomyrmex rugosus	13.1
Pogonomyrmex salinus	7.6
Pogonomyrmex subnitidus	13.1
Prenolepis imparis	11.8

From numerous sources which can be provided upon request



Note that the tall ant nest is for the False Honey Ant, a species commonly found in San Francisco. (This particular study was conducted in FLorida, but with the same species of Honey Ant)

Harvester ants in particular favor disturbed areas often associated with waste burial sites. Indeed, they have been documented at numerous LLRW burial sites.

At the Hanford Reactor Site, a harvester ant species native to California, (*P. owyheei*) was found to move 125,599 cm^3 (150.7 kg) of soil per year across five of its waste burial sites.

A DOE study states, "**Clearly, harvester ants possess the potential for moving small particles of contaminated material to the surface where it could be further distributed by wind and by biota.**"

Parcels A and D-2 have no Institutional Controls, and have been transferred to the City with unrestricted release.

The already ineffective IC's being placed on the rest of the site will do nothing to protect residents and community members using these parcels of land.

Turning off some garden inputs in the PRG calculation makes little difference.

For example, turning off the fruit trees has little effect. Identifying the risk drivers among the vegetables and turning off the lower risk vegetables also produces similar results.

The Navy's release criteria in its RODs were supposedly based on 10^{-6} risk.

But the criteria the Navy used--soil PRGs from 1991 and AEC's 1974 Reg. Guide 1.86 values for buildings--were wrong and inconsistent with EPA CERCLA guidance, in violation of CERCLA 120(a)(2).

The errors need to be corrected and current PRGs used.

Note that EPA's "Blue Book" indicates that radiation risk is now deemed 30% higher than previously assumed. The SLOPE factors, and thus PRGs, will soon have to be tightened.

With all the chemical contaminants and the multiple radionuclides present at HPS,, cleanup standards for individual ROCs and COCs must be at the 10^{-6} PRG levels promised.

One can only fall back from that point of departure based on the 9 balancing and other criteria, and that has not been demonstrated. One of those key criteria is community acceptance, and Prop P and the Board of Supervisors policy make clear that the most protective standards must be used.

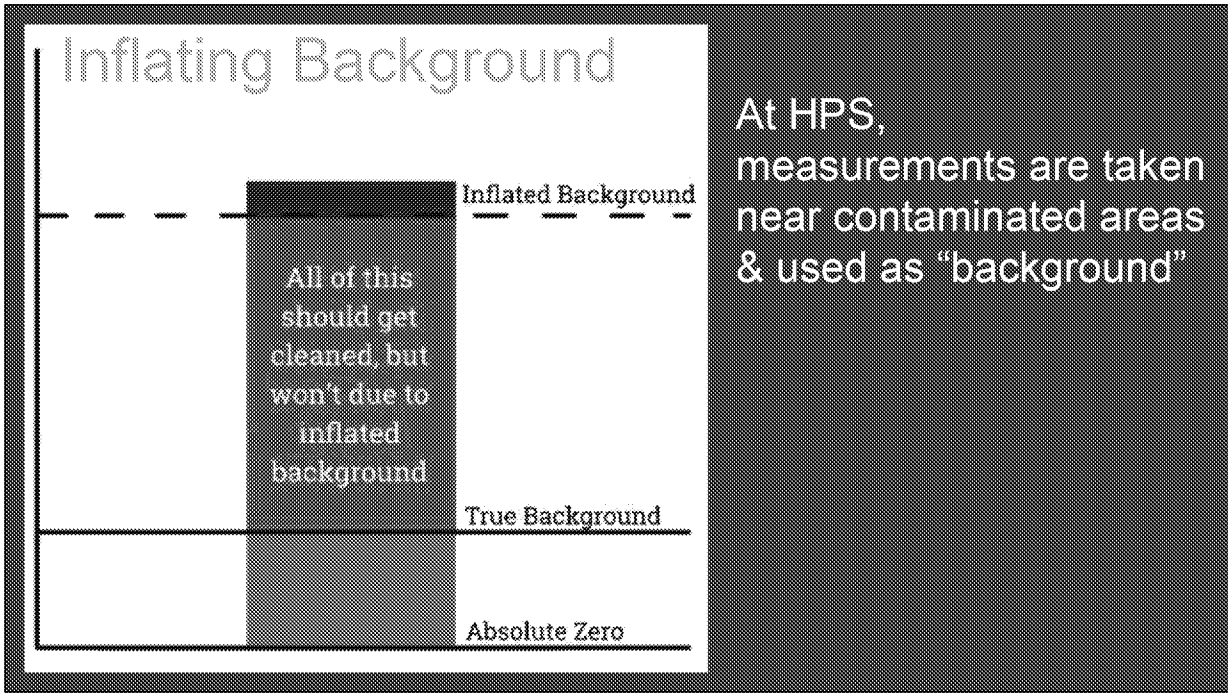
Problems with Retesting Plans

Many of the Problems in the Original Tetra Tech Measurements are Repeated in the Retesting Plans

Parcel G Retesting

2018 Draft Work Plan

- Asserts that 80% of contaminated soil was actually clean
- Weakens cleanup standards even further: ROD values + background
- Relies heavily on gamma scans, which can't detect alpha- or beta-emitting radionuclides. Of the gamma-emitters, scans can only detect Ra-226 at grossly inflated cleanup level, and Cs-137 not at all
- Only 3-4 Radionuclides of Concern
- Inflates background



This image is not to scale, just a visual. This is not to say everything that reads above "inflated background" will get cleaned, often it does not. Absolute zero represents a theoretical absolutely NO contamination — including those that are man made and naturally occurring

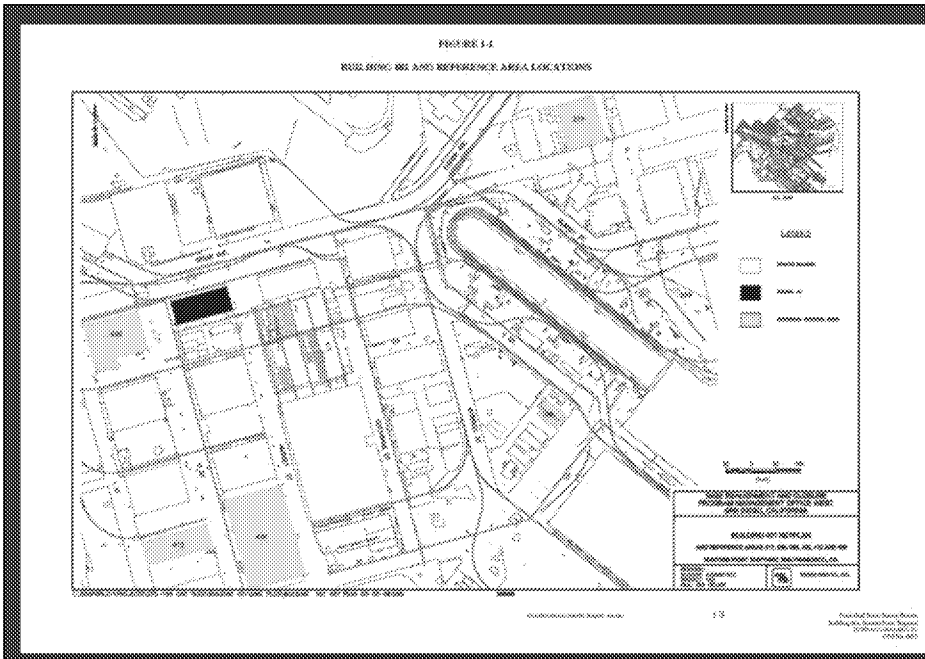
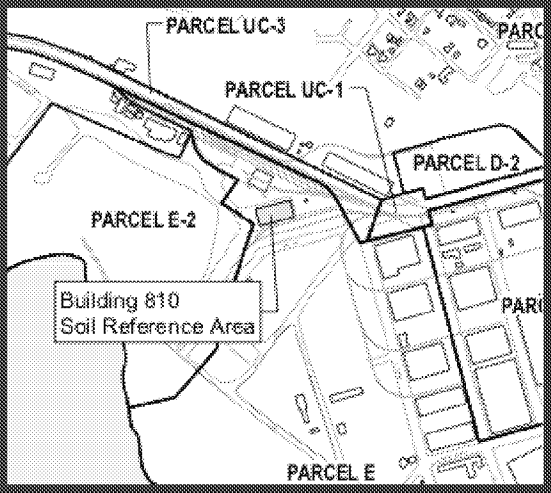


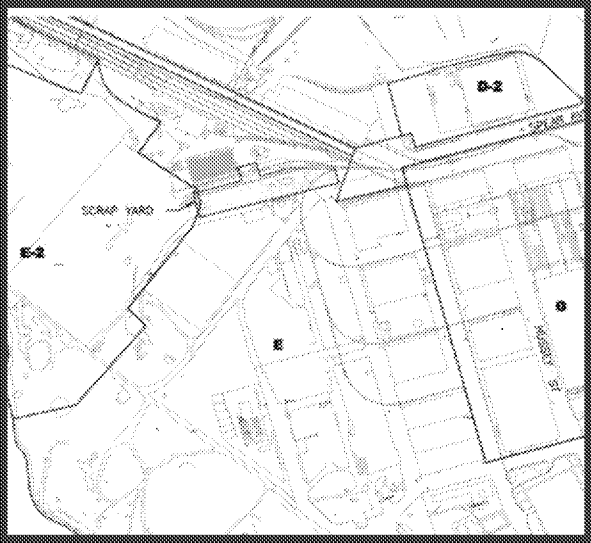
Figure 1-1. Tetra Tech Final Status Survey Results, Bldg 401, Hunters Pt., Sept. 21, 2009

Background in Green

Contaminated building in Blue

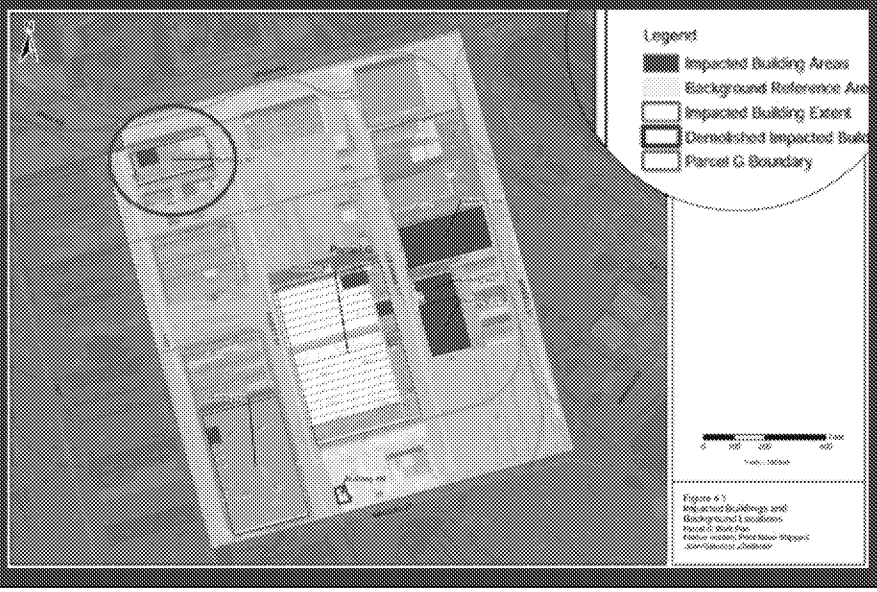


FINAL REMEDIAL ACTION WORK PLAN ADDENDUM, Remedial Action in Parcel D-1, HUNTERS POINT NAVAL SHIPYARD, prepared for the Navy by Apton Federal Services, July 2010

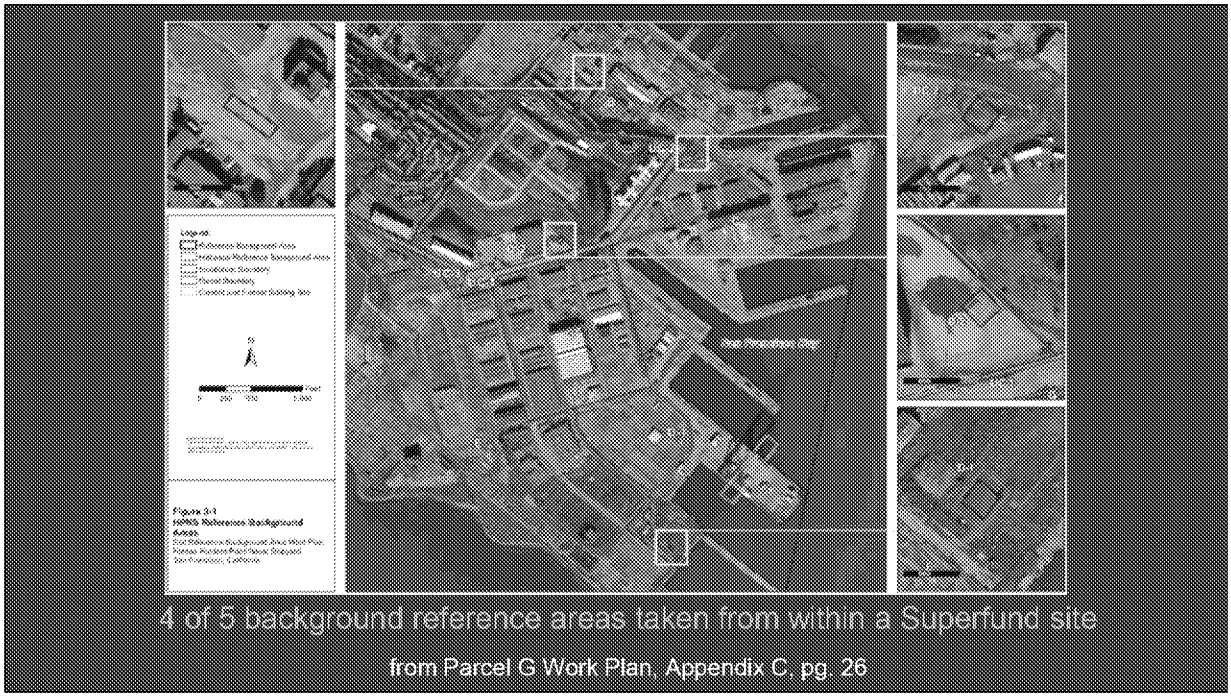


FINAL STATUS SURVEY RESULTS, IR-04 Former Scrap Yard Site and Former Building 807 Site, HUNTERS POINT NAVAL SHIPYARD, prepared for the Navy by Tetra Tech EC, INC

Misuse of Background Continues Beyond TtEC



In the Parcel G draft retesting plan, background is taken inside a contaminated building



4 of 5 background reference areas taken from within a Superfund site

from Parcel G Work Plan, Appendix C, pg. 26

Navy Proposes Low-balling Radium-226

Navy proposes to ignore Radium-226 measured values, arguing they are inflated because they may also be picking up Uranium-235, which has a nearby energy peak.

But from a public health standpoint, it doesn't matters whether your child gets cancer from pure radium or radium plus uranium. The cleanup level for U-235 is ten times tighter than for radium, so the presence of some U-235 should make for more cleanup, not less. U-235 is a contaminant of concern at HPS; one should not ignore it.

Navy Proposes Improperly Using Uranium as Background for Radium

The Navy also proposes to, rather than actually use background values for radium, use uranium levels as a surrogate. However, uranium is a contaminant of concern; large amounts were used at HPS. This is one more effort to inflate background and artificially reduce cleanup.

Parcel G Retesting Plan improperly weakens the release criteria for all radionuclides to be the value PLUS background.

This violates the RODs and longstanding EPA policy.

Table 3-5. Soil Remediation Goals from Parcel G ROD

Radionuclide	Residential Soil Remediation Goal[a] (pCi/g)
^{239}Pu	2.59[b]
^{226}Ra	1.0
^{90}Sr	0.331

[a]All RGs will be applied as concentrations above background.

from Parcel G Retesting Work Plan

Navy retesting plans rely heavily on gamma scans which cannot detect alpha or beta radioactivity or detect almost any gamma radionuclides at the Cleanup Levels

What soil measurements are to be made generally measure only for Ra-226 and Cs-137; only a small fraction are for Pu-239 and Sr-90; and none for the ~30 other radionuclides of concern.

Parcel A Testing Problems

Found ‘suitable to transfer’ in 2004 without almost any soil sampling for radionuclides

Now, CDPH’s limited “gamma scan” is just as inadequate

CDPH Recent Parcel A Limited Gamma Scan Unable to Detect Most Contamination

No soil samples taken, only gamma scanning, which can't see:

- Alpha
- Beta
- Gamma at the levels requiring cleanup

Only covered a portion of Parcel A


CDPH small gamma scanning device that was towed over Parcel A

Even the Navy's own consultant says such a testing approach is inadequate:

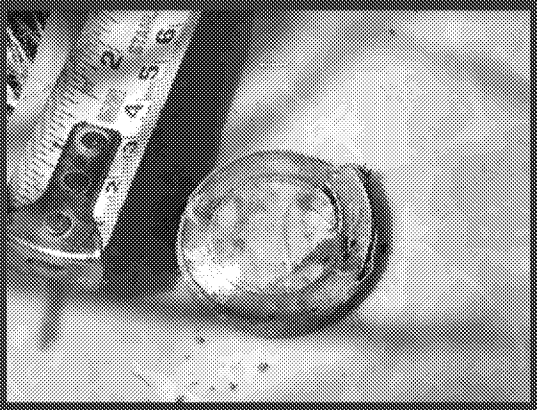
"**We cannot detect alpha and beta in soil by scanning. The only way that we can do that is to collect samples.** So when we design surveys, we design surveys to use a combination of scanning to look at large areas and try and find out where we may have concentrations of these radionuclides, **but we supplement that with soil sampling to make sure that we can detect all the radionuclides of concern that we're looking at, and make sure that we don't—that we don't miss anything, uh, fr-from the you know, that we're not ignoring any of our radionuclides**."

Cont. on next slide

"And somebody asked about Parcel A work that CDPH had done, where all that they did was scan. Uh, scanning without sampling will allow you to find large sources of gamma radiation, that's all that it's for. Uh, it's not designed to be a thorough survey, it's not designed to answer all questions. It answers one very specific question. And CDPH was out there looking to answer that one very specific question. Is it a complete survey and would I recommend that you release the property based on that? No."

Navy contractor Scott Hay, presentation before HPS CAC, January 28, 2019

Yet – Contamination Was Still Found



- ~800 mrem/year at soil surface
  - **Exposure = 400 chest x-rays/year**
- ~30,000 mrem/yr at source

This disproves claim that Parcel A was unimpacted

If contamination was found despite so many limitations, soil sampling might find much more.

Coverup, not Cleanup of Contamination

Original cleanup promise: removal of contaminated soil

Contamination was found to be ubiquitous and cleanup costs higher than anticipated, so Navy modified cleanup plan to rely on covering contamination with 2 feet of “clean” soil or 4 inches of asphalt

Now, majority of contamination will be left in place on site, beneath a thin soil or asphalt cover

Development of the site will require tearing up the thin soil or asphalt covers and the contaminated soil beneath in order to build homes, offices, etc.

Violation of Community Acceptance

(one of the 9 CERCLA Criteria)

Rather than clean up HPS to the most protective standards to allow for unrestricted use, most contamination will be left in place and restrictions will be placed on the future uses of the site, contrary to official San Francisco policy

Proposition P: Public Overwhelmingly Supports Highest Cleanup Standards, Unrestricted Use

Passed in 2000 with 86.4% in favor

"While the federal government is required by law to clean up the Shipyard, the **Navy says it will cost too much to do a thorough job. Instead, the Navy plans to leave behind so much contamination that it will increase the risk for cancer resulting from exposure to the property, requiring the construction of barriers and the restriction of future land uses."**

"Hunters Point Shipyard [must] be **cleaned to a level which would enable the unrestricted use of the property - the highest standard for cleanup established by the United States Environmental Protection Agency."**

DECLARATION OF POLICY; SUPPORTING ENVIRONMENTAL CLEANUP TO RESIDENTIAL LEVELS FOR THE HUNTERS POINT SHIPYARD

The People of the City and County of San Francisco find and declare that: The current Hunters Point Shipyard was built and operated under United Suites Navy ownership for its entire history. Under the Navy's ownership, the Shipyard became so contaminated as to require its placement on the National Priorities List; the list of the most polluted facilities in the nation. Today, the Hunters Point Shipyard is the most contaminated portion of San Francisco and the only federal Superfund site in the City. Residents of the Hunters Point Bayview District, the neighborhood immediately surrounding the former base, are afflicted with the highest levels of cancer, respiratory diseases and other illnesses in San Francisco.

In 1991, the Base Realignment and Closure Commission voted to close the Hunters Point Shipyard. The Shipyard's closure and its transfer back to civilian use in San Francisco will bring tens of thousands of people into direct contact with a federal Superfund site. Once the site is redeveloped, many thousands of people will find a home on the Shipyard as well. The City and County of San Francisco is currently negotiating with the Navy over the cleanup standards and the transfer of the property. However, two of the six parcels of land making up the Shipyard and the surrounding Bay are not part of this round of talks, primarily as a result of the cost of cleanup.

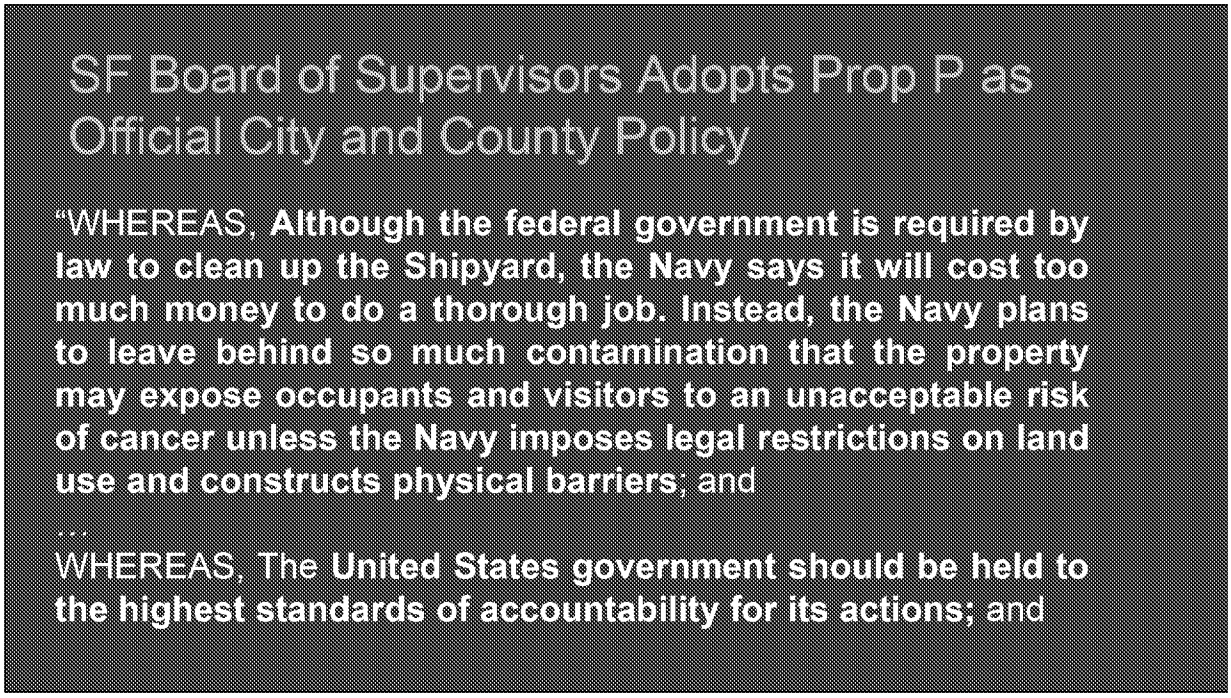
While the federal government is required by law to clean up the Shipyard, the Navy says it will cost too much to do a thorough job. Instead, the Navy plans to leave behind so much contamination that it will increase the risk for cancer resulting from exposure to the property, requiring the construction of barriers and the restriction of future land uses.

The United States government should be held to the highest standards of accountability for its actions. San Franciscans can, under federal law, express their preference in this debate. The National Contingency Plan, the guiding principles under which the cleanup plan is regulated, establishes community acceptance as one of its nine principle criteria for setting the cleanup standards for a toxic site. The Hunters Point Bayview community wishes the Hunters Point Shipyard to be cleaned to a level which would enable the unrestricted use of the property - the highest standard for cleanup established by the United States Environmental Protection Agency.

Therefore, it is the policy of the People of the City and the County of San Francisco that we oppose increasing the risks for cancer as a result of using lower standards for cleanup; and support the Hunters Point Bayview community's request that the Federal government, through its Department of the Navy, allocate funds sufficient to clean the Shipyard to a level that will enable unrestricted use.

Prop P (cont'd.)

"It is the policy of the People of the City and the County of San Francisco that **we oppose increasing the risks for cancer as a result of using lower standards for cleanup**; and ... the Shipyard [should be cleaned up] to a **level that will enable unrestricted use.**"



Resolution 634-01, July 23, 2001
ADOPTION OF PROPOSITION P AS OFFICIAL CITY POLICY FOR THE ENVIRONMENTAL REMEDIATION OF HUNTERS POINT SHIPYARD
Resolution adopting the voter approved Declaration of Policy known as Proposition P as the official policy of the City and County of San Francisco, urging the United States Navy, the United States Environmental Protection Agency and the California Environmental Protection Agency to take all actions necessary to implement Proposition P.
...
WHEREAS, Between 1941 and 1991, the Navy polluted the land, groundwater, and subsurface bay-lands comprising the Hunters Point Shipyard with toxic chemicals, heavy metals, and other serious environmental contaminants and hazards to public health including PCBs, PAHs, pesticides, solvents, petroleum compounds, and other shipyard wastes; and

WHEREAS, Under the Navy's ownership, the Shipyard became so contaminated as to require its placement on the National Priorities List in 1989, the list of the most polluted facilities in the nation; and

WHEREAS, Between 1945 and 197 4, the Navy utilized the Hunters Point Shipyard for nuclear and radiological experimentation while failing to inform the public and the City and County of San Francisco about the potential public health threats to Shipyard workers, the neighboring community, and the local environment; and
...
WHEREAS, Between 1976 and 1986 the Navy failed to oversee its master tenant, the Triple A Shipyard, forcing both the United States Federal Bureau of Investigation and the San Francisco District Attorney's Office to raid the facility, in response to a decade of massive illegal toxic dumping, crimes against the environment and public health; and

WHEREAS, If the Shipyard is not adequately remediated, thousands of residents, tenants, workers, visitors and neighbors will be exposed to residual toxic hazards from an incomplete cleanup; and
...
WHEREAS, Although the federal government is required by law to clean up the Shipyard, the Navy says it will cost too much money to do a thorough job. Instead, the Navy plans to leave behind so much contamination that the property may expose occupants and visitors to an unacceptable risk of cancer unless the Navy imposes legal restrictions on land use and constructs physical barriers; and
...
WHEREAS, The United States government should be held to the highest standards of accountability for its actions; and

WHEREAS, The United States Navy has demonstrated that it is not committed to responsible site management or cleanup and many in the Bayview Hunters Point community believe the department's disdain for its duties in this neighborhood stems from the racial make-up of its residents; and

WHEREAS, San Franciscans can, under federal law, express their preference for a cleanup plan. The National Contingency Plan, the guiding principles under which the cleanup plan is regulated, establishes community acceptance as one of its nine principle criteria for setting the cleanup standards for a toxic site; and

WHEREAS The Hunters Point Bayview community wishes the Hunters Point Shipyard to be cleaned to a level which would enable the unrestricted use of the property - the highest standard for cleanup established by the United States Environmental Protection Agency; and

WHEREAS, The 87% of voters in the City and County of San Francisco in November 2000, who opposed increasing the risk for cancer as a result of using lower standards for cleanup, supported the Hunters Point Bayview community's request that the federal government - through its Department of the Navy - allocate funds sufficient to clean the Shipyard to a level that will enable unrestricted use and approved Proposition P urging that the initiative be adopted as City policy; and

WHEREAS, A cleanup to unrestricted levels under Proposition P would (1) protect the community and future residents of the Shipyard from past pollution, and (2) allow the City to redevelop the Shipyard for the full range of uses set out in the Redevelopment Plan, without substantially shifting the cost of cleanup from the federal government to the City or making implementation of the Redevelopment Plan economically infeasible; and

WHEREAS, Under Proposition P, environmental remedies that require future owners to maintain physical barriers to protect future occupants and the public from exposure to pollution left by the Navy should be used only when other solutions are technically impractical; now, therefore, be it

RESOLVED, That the Board hereby declares that Proposition P, a copy of which is on file with the Clerk of the Board in File No. 011367 , and which is hereby declared to be a part of this Resolution as set forth fully herein, shall be the official policy of the City regarding the remediation of the Shipyard and sets forth a standard of remediation acceptable to the community; and be it;

FURTHER RESOLVED, That by adopting Prop P as policy the Board urges the Navy to clean up the Shipyard in a manner that is fully protective of public health and does not rely on future owners to maintain barriers to protect future occupants and the public from exposure to pollution left by the Navy, unless other remedies are technically infeasible. In those instances where full compliance with the community acceptance criteria established in this resolution cannot currently be achieved due to technical limitation, the Board urges the Navy to consider the remedy a temporary interim solution until a final destructive or neutralizing technology has been developed so that the Navy can return to the site and complete its remediation; and be it

FURTHER RESOLVED, That the Board urges the U.S. EPA and CAL/EPA to approve a remedy for the site only if it meets the above criteria; and be it

...

FURTHER RESOLVED, That the Board hereby urges all participating City agencies including the Departments of Health, Environment, and Planning, the City and District Attorney, and the San Francisco Redevelopment Agency, to ensure full federal compliance with Prop P.

WHEREAS, **The United States Navy has demonstrated that it is not committed to responsible site management or cleanup and many in the Bayview Hunters Point community believe the department's disdain for its duties in this neighborhood stems from the racial make-up of its residents**; and

WHEREAS **The Hunters Point Bayview community wishes the Hunters Point Shipyard to be cleaned to a level which would enable the unrestricted use of the property - the highest standard for cleanup established by the United States Environmental Protection Agency**; and

WHEREAS, The **87% of voters** in the City and County of San Francisco in November 2000, who **opposed increasing the risk for cancer as a result of using lower standards for cleanup, supported the Hunters Point Bayview community's request that the federal government - through its Department of the Navy - allocate funds sufficient to clean the Shipyard to a level that will enable unrestricted use and approved Proposition P urging that the initiative be adopted as City policy**; and

WHEREAS, Under Proposition P, environmental remedies that require future owners to maintain physical barriers to protect future occupants and the public from exposure to pollution left by the Navy should be used only when other solutions are technically impractical; now, therefore, be it

RESOLVED, That the Board hereby declares that **Proposition P ... shall be the official policy of the City regarding the remediation of the Shipyard and sets forth a standard of remediation acceptable to the community**; and be it;

...

FURTHER RESOLVED, That the **Board hereby urges all participating City agencies including the Departments of Health, Environment, and Planning, the City and District Attorney, and the San Francisco Redevelopment Agency, to ensure full federal compliance with Prop P.**"

Conclusions

- Nuclear activities that could contaminate HPS were far more extensive than publicly recognized.
- Those radioactive activities could produce widespread contamination throughout HPS.
- Nonetheless, the Navy simply declared 90% of HPS “non-impacted” and didn’t sample those areas at all.
- What limited areas were tested were tested for only a handful of the dozens of radionuclides of concern.
- 90-97% of survey units that were tested are suspected of falsification.
- There are essentially no data to demonstrate HPS safety.

- The Navy's cleanup standards are extremely outdated and grossly less protective than EPA's Superfund goals.
- The CDPH gamma scan of parts of Parcel A can't detect alpha or beta radionuclides at all and can't detect most gamma at the levels requiring cleanup. No soil samples have been taken.
- Nonetheless, DPH found a radium source where they had previously said no radioactivity could exist.
- The Navy's retesting plans for the rest of HPS are similarly flawed.

- The Navy quietly reversed its commitment to cleaning up the contamination at HPS, switching to covering it with a thin layer of “clean” soil or asphalt.
- This is despite the vote of the people in San Francisco in Prop P, and official policy of the Board of Supervisors, for cleanup to the most protective standards, allowing for unrestricted release
- Unless there is a dramatic change of course, serious questions will remain about the safety of Hunters Point Shipyard.

Key Process Issue and Recommendation

The Navy has not included its PRG calculations in its draft Five Year Review or its draft Parcel G retesting plan, despite repeated directives by EPA to do so.

The public thus has the barest idea of what the Navy is doing to change the EPA defaults in the PRG calculations. The Navy assertions have therefore been shielded to date from public scrutiny.

Since the cleanup must start all over again, because of the Tetra Tech scandal, the other past errors--like using cleanup standards not consistent with EPA's CERCLA guidance--must be corrected. The PRG calculations are at the core of this critical issue.

THEREFORE: EPA should not approve the Navy's PRG calculations, draft Five Year Review, or draft Parcel G retesting plan until those calculations are released publicly for review and comment and until EPA can thoroughly review those comments.

For more information, contact: committeetobridgethegap@gmail.com (831) 336-8003

Our reports on HPS cleanup issues can be found at committeetobridgethegap.org